Telephone Engineer

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A GOOD CONVENTION.

CONFIDENCE in the future of independent telephony, if it ever faltered, is again flowing strongly and steadily. The sixteenth annual convention of the National Association, just closed, displayed more of the old spirit of enthusiasm and resoluteness than has been evident for some years. The apprehension and mistrust of a year ago, and two years ago, were distinctly absent. In short, the keynote of the whole meeting was business; business for the operator and for the manufacturer.

The wholesome creed of the modern operator was expounded clearly by President Savage in his annual address. The whole of this simple interpretation of today's conditions is so good that we have been unable to excerpt it for editorial quotation, and have reproduced it entire on another page. But if any one sentence deserves special recognition, it is this: "The telephone business in this country can be so adjusted, along lines that are perfectly legal, that there will be neither monopoly nor war." This is but a reiteration by Mr. Savage of his last year's sentiment; but it is nearer accomplishment this year. He rather deplores the fact that his altruistic predictions of twelve short months ago have not yet borne tangible fruit; yet, he cannot have overlooked the very real and quite unaffected support which those same views received this time, nor the change in this convention from a minor to a major key. President Savage's ideals have been a bit ahead of his association; but the association is catching up.

The present attitude of the association, as exemplified in Mr. Savage's address and its formal endorsement, embodies the principles advocated by TELEPHONE ENGINEER for over four years. We cannot but feel gratified that our early faith in the ultimate disentanglement of the telephone knot by the application of business logic is finding justification. And there is no question that the sense of the last convention was, more nearly than any previous meeting, in accord with the ideas constantly reiterated in these pages. An uncritical observer might not have perceived that the sessions were pervaded by a new spirit; but those whose memories go back into the more tumultuous years of independent telephony missed a word that once moved meetings—"sentiment." The phrase has been languising for some time, and now it has gone for good. There is no sentiment today in public service—for its only important factors are the public and the service—and the best service wins.

Visitors to a convention are always interested in the exhibits of manufacturers—otherwise the manufacturers would not be there. It is doubtful, however, if they ever regard those exhibits as more than secondary or subordinate to the real purpose of the meeting. And so, of course, they are; but nevertheless, their number and extent forms a better criterion of the prosperity of the industry than does the number of delegates present. The visitor may attend for any of a number of reasons. He is just as apt to come when business is bad as when it is good. But not so the manufacturer. He must pay for space, for freight and for attendants; for if his salesmen are occupied there they are not covering their territory. So he must consider carefully, before taking the step, whether it is apt to be remunerative, directly or indirectly, immediately or ultimately.

Judged on that basis, the sixteenth annual independent convention bore all the indications of an unexampled prosperity. The exhibits were remarkable not only for their number, but for the completeness of their displays and their provisions for taking care of visitors. And they got the visitors, too.

The "split in the party" occasioned by the organization a few weeks ago of the United Independent Telephone Association of America caused no apparent uneasiness, and members of the National Association spoke of the new body pleasantly and with respect. Altogether the tone of the sixteenth convention was optimistic and hearty—and we believe that in that respect it reflected the present and future tone of the whole independent field; for that is the only spirit befitting so vast an industry and so necessary a public service.

COMMISSION ORDERS CONNECTION.

PHYSICAL connection of lines, where two telephone companies divide the business of a community, we have always regarded as an economic necessity, for reasons laid down in these pages time and again. Our first frank advocacy of the principle, in October, 1909, was prior to any general discussion of it as a compulsory result of commission regulation. Gradually it became apparent, however, that those who could not adapt their theories to comply with the conditions of interconnection must needs acknowledge it as inevitable anyway. Frank H. Woods, then president of the National Association, endorsed its principles about a year after our first editorial, and we commented on his statement at some length in November, 1910. Almost immediately Theodore Gary, ex-president of the association, issued a statement showing that he had favored physical connection as early as January, 1908, but his views had been suppressed by the association's advisory committee. This aroused considerable interest; and the subject having been exhausted so far as mere discussion was concerned, comparatively little has been said about it since.

But meanwhile independent companies have been taking actual steps to secure for their subscribers, connections with the lines of other companies, both independent and Bell. Interconnection had up to this time

been tacitly regarded by the independents as a Bell creed. The Bell companies, however, did not prove over-eager to take the step; which, doubtless, encouraged the independents the more as showing the principle of interconnection to be really an independent, and not a Bell move. The result has been to put the whole question hard up to the state utility commission in many places.

The Railroad Commission of California has just ruled that the Pacific Telephone and Telegraph Company, Bell, must interchange business with the Tehama County Telephone Company and the Glenn County Telephone Company, independent. The independents were the petitioners in this case. The independent systems were common battery, the Bell was magneto; but the Bell owned the toll lines. Those desiring to use the latter had, therefore, either to take both services or to put up with magneto service for local calls. It is interesting to observe that of the Tehama County Company's 698 subscribers, 241 had dual service, while of the Glenn County's 889 subscribers, 319 had Bell lines also—a rather high rate of duplication.

Testimony in the case developed that interconnection of these competing lines was a matter of public convenience and necessity; that the Bell company already connected with other independent companies under similar circumstances, and that no technical obstacles to such connection existed. It was also shown that the cost of establishing such connection would be moderate. A witness for the Bell company claimed that interconnection "perpetuates an economic fallacy," in that it tends to continue the duplication of plants and so prevents the establishment of a condition of "natural monopoly." An independent witness answered with the very good argument that, where both companies could connect with all lines, and the subscriber consequently was free to choose between them, the survival of the fittest would inevitably result.

The ruling itself answers other claims of the defence, and lays down principles of interconnection applicable not only to this particular case, but to all other cases in similar circumstances. We reproduce the essential parts of the decision:

Defendant has insisted that to make the connection would be to give the use of a portion of its system to the Independent companies, and to that extent would deprive the defendant of the control of its own property and of the use of its property, without due process of law. We find that this point is not well taken. If the connections were made, the defendant's property would remain under the exclusive control of the defendant and its operators.

The operators of the independent companies would have no control over the defendant company's property. The defendant company would be interfered with in its operation only to the same extent as would be true in case of the receipt of so much new business from any other source. The result would be analogous to that if the defendant company bought some independent company and then received so much business from that company.

The only important contention of the defendant herein is as set out in the testimony of Mr. Coolidge, a witness called in the defendant's behalf, that to grant the relief prayed for by complainants would perpetuate an economic fallacy because it would lead to duplication of facilities in the case of a natural monopoly.

While we agree that, as a general proposition, the interest, both of the public and of the consumers of a public utility, which is a natural monopoly, may be beter served by one agency than by two, yet there are very important reservations which must be made from this statement. The only warrant for the existence of a monopoly of any sort must be found in the advantage to the consumers and patrons of such monopoly.

The reason why it is ordinarily believed that competition between natural monopolies is advantageous for the patrons of such monopolies is the fact that, following such competition, there is usually a reduction of rates and an improvement of service. Whenever humanity finds that one experience is invariably followed chronologically by another, humanity is inclined to believe that the second experience is the result of the first.

That such is not the fact may often be demonstrated. The lower rates and more adequate service which follow competition between natural monopolies are rates and service which demonstrably could have been afforded by the monopoly without competition, unless the lower rates and improved service which follow such competition are of a character which the agency according them cannot afford to give.

In short, when we find that a power company, for instance, lowers a rate when a competitor comes into a field, or improves its service, we can readily see that such power company could have lowered its rate before the competitor appeared, and it likewise appears that it could have legitimately made it even lower before the competitor appeared than it now voluntarily accords under competition. Before the competitor appeared it did not have to divide its consumers with anyone.

A reduction of rates of a natural monopoly and improvement of service under competition is an indication of one of two things, either that the rates are too high and the service not good enough before the competition arose, or that the rates are made too low and the service too good for the price under the stress of the competition. The former result could and should have been brought about without competition; the second result cannot be permanently maintained even under competition unless the utility according too low a rate is charging too high a rate elsewhere.

The common practice, of course, is to make the rate too low and drive out the competitor, and after the competitor is eliminated, or a combination effected, to raise the rate and recoup for losses attendant upon the rate war. We consider it bordering very much on effrontery for a public utility to urge that it is an economic fallacy to duplicate facilities, unless such utility has accorded to the public the advantage to which the elimination of duplication is supposed to entitle it.

In this case it was testified by Mr. Coolidge, witness for the defendant, that when the company which he represents absorbed its opposing companies in Oakland and San Francisco, and thereby eliminated at least in part the economic fallacy, it actually reduced the number of employees used to serve the public of these cities while the competition existed. It is hard to persuade the public that an economic fallacy such as here under consideration is not as to it, the public, a good thing, when, as a matter of fact, when the economic fallacy was inflicted upon them their condition was better than either before or after the existence of such economic fallacy. No public utility, or no other monopoly, as far as that is concerned, can ever justify, nor should it be able so to do, its existence as a monopoly on the theory of an advantage to its patrons which it does not accord.

In the case before us, however, we do not admit that granting the relief which the complainants ask will produce an economic fallacy even under the defendant's theory. The major portion of the duplication which exists, and particularly that in the rural districts, was brought about by the failure of the defendant company adequately to serve the public. The duplication now exists, and the granting of the application, instead of bringing about duplication, will minimize the effect of it.

In granting this application we desire to reassert the policy which was laid down in the case of Pacific Gas & Electric vs. Great Western Power Company, decided by this commission on June 16, 1912, to the effect that where a utility adequately serves the public at reasonable rates and the territory is completely served, this commission's inclination will be to permit such utility, if it be a natural monopoly such as a telephone or lighting company, to hold its field free from competition, but that failure so to do will result in this commission's permitting competition when a competitor applies.

We find that the defendant herein has not adequately served the public in the territory in question, and that such failure on the part of the defendant has directly brought about and called into being the independent companies which now desire this connection. And we desire to warn the defendant that in order to maintain and justify a monopoly in any portion of the state it must accord as good, if not better, service when competition is not imminent as it can afford under competition.

The reduction in the number of employees when competition is eliminated is the very opposite from what this company should do, and we believe that such a proceeding is absolutely

unwarranted. We, therefore, are of the opinion that no duplication will be brought about by reason of this order, and, hence, no economic fallacy produced, and we are further of the opinion that the duplication that already exists is the direct result of the default on the part of the defendant in the adequate performance of its duty. We submit the following form of order:

The Tehama County Telephone Company, and the Glenn County Telephone Company having filed with this commission their respective complaints against the Pacific Telephone & Telegraph Company requesting an order of this commission for a physical connection between the lines of complainant and defendant companies, and for the establishment of through routes and joint rates, tolls and charges as specified in said complaints, and said proceedings have been consolidated for hearing and a public hearing having been duly held thereon, and evidence having been introduced by all parties to said proceedings, and the Railroad Commission being fully advised in the premises, we hereby, in reliance on the evidence in this case, make the following findings of fact:

1. We find as a fact that a physical connection can reasonably be made between the lines of the defendant company and the lines of the complainant independent telephone companies, between their respective exchanges in Red Bluff and Willows, and that the lines of these companies can be made to form a continuous line of communication by the construction and maintenance between and in said respective exchanges of suitable connections for the transfer of messages or conversations.

2. We find as a fact that public convenience and necessity will be subserved by such connections.

3. We find as a fact that the companies parties to these proceedings have failed to establish joint rates, tolls or charges for service by or over their lines and that joint rates, tolls and charges ought to be established to the extent hereinafter indicated.

4. We find as a fact that the purpose for which these connections are desired and herein ordered, is not primarily to secure the transmission of local messages or conversations between points within the same city and county, or city or town, but rather that the purpose is to secure the transmission of long distance or toll messages and conversations from a point in one city, or town, or county to a point in another city, or town, or county, to the extent hereinafter indicated. Basing our order upon the foregoing findings and the further findings contained in the opinion which precedes this order, it is hereby ordered as follows:

1. That a physical connection be established between the telephone exchanges of the Tehama County Telephone Company and the Pacific Telephone & Telegraph Company in the city of Red Bluff, California.

2. That a physical connection be established between the telephone exchanges of the Glenn County Telephone Company and the Pacific Telephone & Telegraph Company, in the city of Willows, California.

3. That through routes be established over said connections for the purpose of conveying long distance or toll messages and conversations to and from the line of complainants in Tehama and Glenn counties, in California, from and to the lines of defendant in other counties in the state of California, not to cover the transmission of messages between points in Glenn and Tehama counties, and that this order shall apply only to California state business.

4. That joint rates, tolls and charges be made and used, observed and in force in the future over said through routes, these rates, tolls and charges to be the same as the rates, tolls or charges now or hereafter to be established between the points affected, respectively, in Tehama or Glenn counties and other points, as affected, in the state of California, on the lines of defendant company. If the companies cannot agree upon a division between them of the joint rates, tolls or charges herein established, they shall so notify the commission within 20 days of the date of this order, whereupon the commission will proceed to establish such divisions by supplemental order.

5. That the cost of installing the physical connections shall be borne by the complainant companies.

6. That the companies are directed to agree, if possible, upon the rules and regulations to govern the use of said physical connections and the transmission and transfer of messages and conversations over the same. If the companies cannot agree upon such rules and regulations, they shall notify the commission within 20 days of the date of this order, whereupon the commission will establish such rules and regulations by supplemental order.

7. This order shall be complied with within 30 days from its date.

SYMPATHY FOR THE OPERATOR.

WHENEVER we read in the lay press of the trials and hardships of the telephone operator, done in poetry or prose, we are pleased. We think the public is beginning at last to realize the intricacies of telephone operating, and to extend a little sympathy, instead of a good deal of abuse, to the operator. We like to believe that the impatient, quick-tempered, hard-hearted American people are being softened by the recital of operating stress and strain, and are making allowances for the delays and wrong numbers which may be expected to follow the natural perturbation caused by verbal attacks which may not be answered.

If the operator's is a hard task, it is wholly because of that same abuse from the public. The manual part of the work is no more difficult than a hundred other lines of effort pursued by working women. And with rest periods and cozy rest-rooms in which to enjoy them, with libraries and gymnasiums and all the rest of the welfare equipment provided by paternal corporations, the life of the operator would doubtless he a rosy one—if the public would cease its perpetual nagging.

But it is quite evident that the appeal to public sympathy may be overdone. These chivalrous defenses of the poor over-worked operator are not prepared in the publicity departments of the telephone companies; but they often look as if they were. The hasty reader might easily conclude that the company was apologizing for its service on the ground that the work was being done by girls with sensitive nerves. But the telephone company knows better than to offer such an explanation even for poor service. It is the newspaper space filler and the hack-writer looking for human interest stories who find such good copy in the intricate operations of the telephone exchange.

The newspaper reading public is casually interested in the fact that the telephone operator makes so many connections a day, or an hour, and stands much abuse without talking back—just as the same public is interested in the fact that Smith's department store in London serves tea to its clerks, or that women in Jenkinsville, Ark., wear shoes one and a half sizes larger than the average. The interest, in other words, is purely academic, and is never applied to the public's particular and specific service. People actually care little or nothing whether their telephones are operated by a woman, a man or a machine. The fact that telephone companies provide rest rooms and libraries for their employees, while pleasant to contemplate, is absolutely unconnected in their minds with the service they get.

In short, when a telephone subscriber wants a connection, he wants it delivered as quickly as the most highly efficient system can complete it, and without any balk. The system that can fill that modest requirement all the time, regardless of the means of performing it, will survive.

A contract has been signed by the Canton government with a Hongkong firm for the erection of a modern exchange and complete telephone system for the city. The amount of money involved is understood to be about $1,000,000 (about $500,000 United States currency). The successful tenderers were Arthur Nilssen & Co., representing L. M. Ericsen, of Stockholm, Sweden. The contract calls for an entirely new telephone service, all the existing telephones to be discarded. It is hoped in the near future to connect with Hongkong.

NORTH DAKOTA CONVENTION IN MARCH.

The North Dakota Independent Telephone Association intends to make a most successful event of the holding of its seventh annual convention, March 11 and 12, at Valley City, N. D. The program arranged for the two days' affair is as follows:

TUESDAY, MARCH 11, 1913.

10:00 A. M.—Reception of members and friends by Officers and Committee.
11:00 A. M.—Convention Called to Order.
Address of Welcome—
Mayor L. S. Platou, Valley City.
Response—Hon. J. Carmody, Hillsboro.
Recess.
2:00 P. M.—Telephone Legislation—
Hon. Tracy Bangs, Grand Forks.
The Problem of the Growing Town—
H. M. Wilson, New Rockford.
Bookkeeping Essential for Small Companies—
R. P. Baird, Fargo.
Handling of Complaints—
Frank Bracelyn, Fargo.
Co-Operative Companies—
A. J. McInnis, Dazey.
Co-Operative—
O. T. Bryant, Napoleon.
5:00 P. M.—Executive Session.
7:40 P. M.—Getting the Business—
F. L. Shuman, Bismarck.
Good Will—
M. G. Stokesbury, Grand Forks.
Open Parliament.
Salesman's Talks.
9:00 P. M.—Reception at Commercial Club.

WEDNESDAY, MARCH 12, 1913.

Time up to 11:00 A. M. given to visiting Exhibits of Manufacturers.
11:00 A. M.—Telephone Traffic—Paul Bunce, Fargo.
The Operator and Her Relation to the Public—
Eva McCready, Minot.
Selecting and Instructing Operators—
Harriet Fleming, Bismarck.
Recess.
1:30 P. M.—Address—J. C. Kelsey, Chicago.
Encouraging Efficient Employees—
C. H. Coar, Minot.
Revenue Problems—
L. D. Richardson, Fargo.
Delinquents—
R. L. Welliver, Williston.
The Pioneering Problem—
J. E. Lewis, Hettinger.
How to Prevent Trouble—
J. P. Smith, Beach.
Open Parliament.
5:00 P. M.—Executive Session.
Election of Officers.
Choosing Place for Next Convention.
Unfinished Business.
7:30 P. M.—Entertainment—Normal Auditorium.

ORDERS TELEPHONE BY WIRE.

Ordering the installation of a telephone by wireless was the unique way in which M. E. Chase, purser of the carferry Pere Marquette No. 15, of Ludington, Mich., made it known to Manager Kelly of the Michigan State Telephone Company that he wanted an instrument placed in his house, and the local office, not to be outdone, saw to it that the telephone was placed and connected up at once, sending back to the carferry the wireless message:

"Your telephone number is 261-L and your folks are waiting for you on the line." The first message was sent when the boat was about in the middle of Lake Michigan and the answer came when it was still several miles from the Ludington port.

A Lot of Loaded Lines

Wonders of the Telephone.

By Walt Mason.

It is indeed a wondrous thing, this modern telephone, that will across the distance bring a speaker's lightest tone. Sometimes I sit and contemplate its weird, surprising plan, and bless the scientist so great who gave this boon to man. And then again I rant and bawl about its many faults, and tear the blamed thing from the wall, and on the pieces waltz. Your mirthful lips are stricken dumb, sealed are the founts of song, when central (busy chewing gum) gets all the numbers wrong. I sometimes wonder what we'd do if we should lose our 'phones. We'd be a hopeless, helpless crew! We'd fill the world with groans. To get back to our father's ways would fill our souls with aches! A message then would take three days that now a minute takes! And then again it seems to me that life would be more gay if all the telephones that be, were burned or shipped away. For when in haste I'd use the 'phone to gossip with my frau, I hear stern central's monotone: "The line is busy now!" It is a nuisance and a boon, a blessing and a curse; perhaps they will improve it soon, perhaps they'll make it worse.

EXTRA! WONDERFUL EXPERIMENT AT ROYAL EXCHANGE!

The Royal Exchange in London, England, is to be "connected by telephone with the city's network of trade and commerce. The work is being done so thoroughly that six separate telephones, enclosed in as many stand boxes, will be provided. They will be placed in different parts of the Ambulatory, in such a way as not to obstruct the passing to and fro of visitors, or the view of the wall paintings." Remawk'bly progressive and enterprisin' step, you know, old top. Fawncy they'll find the bally machines really useful, too.

BETTER GET ON THE WAGON, OLD CHAP.

[Letter from a man in Australia.]

I have had some very narrow squeaks with snakes lately, and to avoid being bitten I should like to have some device that would let me have a bit of safety, the place where I live on the Western Line being infested with various kinds of snakes. If you have a small battery, with a wire about 7 ft. long, so that I could fix the wire on to a long thin pointed stick or bamboo and place same on the snake, then turn the current on and so electrocute, or at least make him insensible, I think that that would be the best way to fix him up; a shot gun being too heavy to carry with you, as you are not always going shooting, and you have to be a good shot with a revolver to hit him, while at the same time it is too dangerous, as he might spring on to you before the smoke cleared away; and you cannot always get a good stick to finish him if you have neither of these articles. If you have the battery, and think it would be strong enough while at the same time fitting into a big pocket, I would take it as a favor if you would send me a catalogue with the price at your earliest convenience. The battery would not have to be too dangerous, as the children would have to use it if it was a success.

THE SECOND POST.

[Letter received by the president of the New Berlin Telephone Company, New York.]

south new berlin, sep. 9, 1912.

Mr. Youreye Peersawl, present telfone co.

Deer sur: i want you to git them dam telfone polds offen my lan or i will chop em down an i heerby notiphy you to get em offen my lan too wunst and if you send enny boddy on my lan to fix enny wires I will prossycewt you to fullxtent of the law for trespis and i give you notis if them polds ain't got offen my lan in reesble time thay will be cud down.

Truly your,
Lemuel Spraker.

P. S. I also give notis you must move holes also offen my lan.
L. S.

The esteemed *Scientific American Supplement* prints an enlarged view of an insect, with the caption, "Stable Fly (Stomoxy's Calcitrans), loaned by Dr. Sheppard for Photographic Reproduction. After reading in the popular press of the sins of this animal, we hope old Doc Sheppard got him back, and are glad the process mentioned was only photographic.

P. H. W.

Chicago Operators Stage a Play

By Mabel Condon

'TWAS a wonderful time everybody had at the annual entertainment and ball the Chicago Telephone Company's girls gave at the Hotel La Salle and, beyond a doubt, it was the very best of all the good times the girls have given and the company sponsored.

The hotel's nineteenth floor, with its gold room and red room, was the scene of the girl-festival, and the date of its holding stretched itself from one night into two nights and one afternoon in order that the many turned away the first night might be accommodated. So Tuesday, February the 4th, Wednesday afternoon and Wednesday evening witnessed the triple holding of the operators' party. Preceeding the matinee performance, the entertainers were the guests of H. H. Hill at a luncheon at the hotel.

"Just Bits of Fun" was the program offering and was the result of the combined mental efforts of the girls themselves and of Mrs. F. E. Dewhurst, the "little mother" to all the telephone girls of Chicago. And 'twas a fun-full and a merry skit with more than one hundred girls singing, dancing and talking the "Bits of Fun" over the footlights of the improvised stage to the audience, just beyond, that caught and relished every laugh.

The well-known bachelors of the telephone company were at the mercy of the jesters, who made the most of their opportunity and let the world of operators know that Alonzo Burt, vice-president, George Duffy, superintendent of collections, C. H. E. Arnold, central traffic superintendent, J. W. Bradshaw and B. R. Cooper head the list of the company's eligibles.

Dancers of Dutch, Irish and Spanish Steps.

To the tune of "Dixie," the chorus opened the program with "The C. T. C. Forever." Then Mr. Burt made an address and the "Bits of Fun" swung into action at the "Blue Bell Inn," having as its locale Doxbury, Mass., where H. H. Hill has his summer home. The roles, both male and female, were all taken by the girls, the only outsider being I. M. A. Daffodil, an electrified switchboard operator.

No position occupied by the girls of the traffic squad was left unrepresented. There were the operators, themselves, in white shirtwaists and black skirts, equipped with trunk set and ready to plug in at a position; the supervisors were next in rank; then came the monitors, symbolic of trouble, if the operators don't watch out. The lunch girl, with huge market basket and proffered in-edibles, made a caricature and the chief operator put in an appearance of much dignity. The toll operators were in white with "Toll" pennants at their waists and the repair clerks were in striped costumes and natty little caps, and busy each with a telephone. The tandem operators, in linen dusters and goggles, leaned against a tandem for support, the hospital operators wore nurse costumes and grouped themselves with the information girlies who busily looked up numbers in the telephone directory.

There was a Russian drill by sixteen of the girls, Spanish, Dutch and Irish dances by others of the city's operating forces and there were violin and vocal solos. "The Maid of the Mist" was a pretty dance and one of the vocal soloists was a "North" exchange operator, who was a chorus mem-

Tandem and Information Operators and Repair "Men."

ber some time ago of the Chicago grand opera company.

"Hello girl" praises were sung to the air of well-known songs, the most popular being "All the Chicago Girls" to strains of "When Johnnie Comes Marching Home." It went:

In this department we have jewels,
They're girls. They're girls.
You never catch them breaking rules,
Those girls, those girls.
They answer sweet and then repeat
And work away so swift and neat.
They're our girls, girls, girls,
All the C. T. girls.

Now who is it brings in the "mon"?
The girls, the girls.
With inside cords they say "two one"?
The girls, the girls.
And when they work, O, how they work
And never, never, never shirk,
They're our girls, girls, girls,
All the Traffic girls.

They work out North, they work out West,
The girls, the girls.
And those down town are at their best,
The girls, the girls.
And 'way out South where Forbes holds sway
They certainly do earn their pay.
The girls, girls, girls, girls,
In puffs and bangs and curls.

Who makes the best of cooks and wives?
"A" girls, "B" girls.
They'll smash the china,
Dull the knives,
These girls, these girls.
But their many virtues far exceed,
Such little faults, O yes, indeed!
And we love them all, big and small,
Our dear Chicago girls.

The closing number was "Good-bye Everybody," in which the audience was invited to join, and—the program was over.

After that, the little gold-backed chairs which massed the rooms and overflowed out into the corridors, were whisked away, and an orchestra appeared from somewhere and there was general dancing; only for the girls, though. The several men representing the powers-that-be in the way of things telephonic in Chicago, said their good-byes as the dancing started and the girls chose partners, encored the numbers and bowed their partners to seats, in a most approved and gallant style. And the manless dance was lots of fun, they all said.

At each giving of the play, fifteen hundred telephone operators comprised the attendance. A picture was taken of each audience, the three pictures to be combined to make a picture of more operators than has ever before appeared in a group photograph.

Much of the credit for the success of the party, or parties, goes to Miss Mary Clifford, chief clerk of the traffic department, as it was she who managed the big undertaking. Mrs. Dewhurst was in every arrangement with all the enthusiasm and interest she displays in anything concerning her girls.

All the novelty costumes worn in the musical skit were made by a matron at the main exchange. The girls who comprised the cast were picked from every exchange in Chicago and their work arranged so that they could conveniently attend the rehearsals held several times a week at the main exchange.

The telephone company financed the affair. It is its annual expression of appreciation of the service rendered by the girls, and one very much to the liking of everybody concerned.

Coast to Coast Telephony Imminent

The American Telephone and Telegraph Company announces that it is to begin at once the construction of two direct telephone lines between New York and San Francisco and Los Angeles. The cost of three-minute conversations between these cities will be between $16 and $20.

Ten years ago such an announcement would have been greeted with incredulity. But today it is accepted as part of the natural order of things. Do we not hold telephonic converse with Denver, which is 2,160 miles from New York? This service was initiated a year ago. From New York to San Francisco is 3,250 miles; but the success of the New York to Denver line assures the success of the extension of the service to the coast.

In a year or two talking across the continent will cease to be a novelty. Then man will look for new fields of the air to conquer. Is it hazarding too much to say that within another decade America and Europe will be talking to each other by means of telephony?

Michigan Commission News

F. L. Convis and several other citizens of Gratiot county have made complaint against the Telephone Company of Owosso. They allege the company has materially increased its rates by charging tolls for talking with nearby towns. The contracts of the subscribers provide for this service free.

Another telephone merger was authorized, this time an independent line purchasing the Michigan State Exchange. The merger authorized is at Milford, where the Milford Home, independent, purchases the Michigan State Exchange at that place for a consideration of $7,500. The commission also authorized the Milford Home to increase its capital stock from $10,000 to $15,000.

The Hospital and Toll Operators.

Independents Have Big Convention

Sixteenth Annual Meeting

IT was a most satisfactory convention, the sixteenth annual of the National Independent Telephone Association, which was housed at the Hotel La Salle, Chicago, on the eighteenth, nineteenth and twentieth of February.

President Manford Savage was in the chair at the opening session, which was a short one, owing to the day's being set apart for a visit to the world of exhibits which filled every available bit of space on the seventeenth floor. At this short session, Leon Hornstein, assistant corporation counsel of the city of Chicago, and the personal representative of Mayor Harrison, addressed the assemblage in terms of welcome and expressed the hope that the delegates would take the time to view the city's wonder spots, as they, and the city itself, were their's during the three days' convention.

As one of the best known of independent telephone men, Judge N. G. Hunter, of Wabash, Ind., made reply to Mr. Hornstein's welcoming address. He said in part:

We used to gather here with fear and trembling in the early history of this organization, less than fifteen years ago, I may say, when the independent interest in telephony represented throughout the country acted as though ashamed of its own existence. It was threatened from every quarter of the globe, almost, with extermination by the great monopoly, and none of us knew what the future held in store. Nor was that all. We were not quite sure of the fact that we were very welcome guests of this city at those periods.

But the time has come in the march of events from year to year, until we are here like a young giant, breathing the air and the spirit of progress and advancement that we get from this city, until we are an army with banners moving forward to success in this great world of independent telephony.

Today the independent telephone interests of America represent, I may say, probably more than six millions of stations—a marvelous development when you take into account the handicap that seemed to confront us at every stage of the movement.

We came into existence at the demand of the people; a silent yet forceful protest of an outraged community brought the independent movement into existence. Why? Because there existed in the minds of the people the notion that a monopolistic tendency was prevailing on the part of the great corporation to take possession of this magnificent country and operate it for its own benefit. We have responded to that demand, and here we are, independent, self-supporting, aggressive; and it will not be denied that we have been public benefactors and are such unto this very hour.

We have waged our fight and won. There is nothing now to do, since the battle is over, but to stand shoulder to shoulder, as I believe we will henceforth, and go forward to greater and more magnificent things in this country. And why not? I am one of those who believe in a fair field and no favor, and I am one of those who believe in fair competition in the United States. I am not afraid of it. Why should you or we be afraid of it? We have been able to take it up ourselves under more adverse conditions than exist today, and there is no reason why we may not continue and shall not continue for the future.

The time has come when the sword may be sheathed, in my opinion, in so far as antagonism is concerned between the two great telephone interests of the country. After having ascended to the point which we have attained, there is no reason why this commercial warfare should be kept up and such bitterness and such contention go on. There is room in this grand, magnificent land, from ocean to ocean, for the two great interests that are now developing and growing and will continue to grow. There is no reason why the community in the future should be annoyed and nagged with the contention that we have had in the last. Let us put all those things aside and let us bury the hatchet so far as feeling is concerned. Let us look forward. Let us look to the East, as it were, and go forward in this mighty work, not only for the benefit of the interests that we represent, but likewise to meet the public demand that is made upon us.

The annual address by President Savage was next delivered and was appreciated as being the best he has ever given before the body of independent telephone men. It is reproduced on another page of this magazine. After its delivery, Judge Hunter suggested that a motion be made, by any member of the association, that the address of the President receive a special mark of approval. A motion was made by W. J. Thomas of Shelbyville, Ky., one of the directors of the association, that the address be given general distribution.

Attention was called by President Savage to the banquet scheduled for the following night, and which, he prophecied, would be the most remarkable of the association's history. He was followed by J. W. Callahan, general manager of the Illinois Telephone Company and president of the Service Association. Mr. Callahan's message was one in the name of the Tunnel company.

In behalf of our company, he said, I wish to extend to all the delegates an invitation to visit any or all of our automatic exchanges; also, if they so desire, to take a trip through the tunnel, the longest underground railroad in the world. We can take care of at least twenty-five at one time, and if you will kindly call at room 1712, arrangements will be made for taking care of a party to consist of not more than twenty-five. We will gladly take care of all of you in parties of this size.

That ended the first day's session. The second had the prompt attendance desired and was opened by President Savage with a suspension of the rules which allowed for the naming of the nominating, resolution and credential committees, the motions for which were adopted and the committees instructed to report at noon.

J. B. Earle, Waco, Texas, moved the appointment of the following nominating committee: R. L. Barry, St. Paul; H. D. Stroud, Chicago; C. Y. McVey, Cleveland, and A. F. Adams, Kansas City.

H. D. Stroud moved the appointment of the following as the committee on credentials: N. G. Hunter, Wabash, Ind., A. M. Neill and D. M. Neill, St. Paul, and J. W. Barrett, Pekin, Ill.

A. F Adams moved for a credential committee composed of W. F. Goodrich, La Crosse, Wis., Gansey R. Johnston, Columbus, Ohio, and L. E. Hurtz, Lincoln, Nebr.

The Telephone Service Association was then placed in charge of the technical portion of the program by President Savage, and R. L. Barry, chairman of a committee which comprises the traffic and engineering committees of the association, presided.

The first speaker to be introduced was J. W. Callahan, who this time spoke in his double capacity, that of president of the Telephone Service Association and as general manager of the Illinois Telephone Company. Illustrations of the usefulness of the purposes put in practice by the Service Association were made by stereopticon views. Mr. Callahan's talk, in part, follows:

About six months ago a few gentlemen representing the telephone interests in the central states met in this city for the purpose of discussing a subject which seemed of great importance at that time. The subject discussed was service and long distance business. We had been receiving numerous complaints from

various subscribers and the various toll line companies throughout the central states with which our company's lines are connected. In order to locate and place the responsibility for these many complaints, it was thought advisable to call together men representing the various interests involved.

The result of that conference was the organization of this Service association. A committee was appointed during the day to draft a set of rules. It was found necessary that we have a set of operating rules, something, it seems, that a large number of companies have never had. This committee consisted of men who have been connected with the telephone business in various capacities for a number of years; men who were well posted; men who understood the meaning of rules; men who have fought the battle and gone through the telephone business from end to end. They subsequently met in Chicago and prepared a set of rules which are now in circulation and are now being used by a large number of companies throughout the central states.

How well these rules have been prepared, how well they apply to the various companies using them, I am not in a position to say; but we must admit that when men put in their time and give their attention and their ability to the drafting of a set of rules, there must be something about them that is worth considering. It is true we have met with some criticism on the formation of these rules. That is why I say that whether they are right or not, I do not know, because there are some things about the telephone business that I do not know; but I do feel that without a proper set of operating rules, we can do nothing.

We went along for some time in our humble way, doing the best we could with this association with the means at hand. A little later it was thought advisable to send a man out into the field, a man who would come in contact with you operating men who are handling the telephone business. This gentleman was started on the 16th day of January and he is here today to tell you of the success he had had since that time.

During the time I have been connected with the telephone company, which is comparatively short, I have observed a great many things. I have had occasion to meet representatives of the various telephone companies; men who have been in the telephone business for years; men who have grown old and gray fighting the battles of telephony; and from the appearance of these men and from the appearance of men before me today, I feel proud to say that I can be and am associated with such a set of men as you are, men as I say, who have fought the battle, and, from your appearance, have led yourselves to victory.

It is unnecessary for me to dwell longer upon the objects of the Central States Service Association, at the present time known as the Telephone Service Association. In order to take in a larger scope, in order to cover the entire field with this association, the executive committee met a few days ago and decided that the name should be changed to the Telephone Service Association instead of the Central States Telephone Service Association, so that at the present time every independent telephone company is eligible to membership in this association.

Chicago, as you must admit, is the hub of a great telephone field. Within a radius of five hundred miles of this great city, we have approximately one million and a half telephones. Within a very short time the lines of the Illinois Telephone and Telegraph Company will be connected with every one of these million five hundred thousand telephones.

Frank L. Eldridge followed Mr. Callahan on the talk program with the topic "Field Observations," in which he made clear the work being done by the Service Association. An address made by M. H. Moffett on the "Manufacture and Care of Dry Batteries," was followed with close attention and was interestingly illustrated by the stereopticon.

A moving picture film depicting a make-believe incident in a telephone operator's work created a short diversion and the convention tone was resumed with the address of H. S. Durant of the American Steel and Wire company, whose lecture was an illustrated one on "The Manufacture and Use of Wire in the Telephone Industry." The history of the wire was given from the mining of the ore through the processes necessary before it became the finished product. It was an interesting subject, cleverly handled, and concluded the session for the morning.

Another motion picture film, showing operations along the Panama canal, opened the afternoon's meeting and was followed by a paper on "Publicity," by Bayard W. Borten, of the Taylor-Critchfield corporation, an advertising concern.

"Commercial Problems in a Moderate Sized Exchange," the topic presented by C. W. Winkler, commercial superintendent of the Illinois Telephone and Telegraph Company enlightened the hearers as to a number of publicity methods which brought results to the company. Motion pictures were again the order and were followed by a lecture on the "Manufacture, Care and Maintenance of Storage Batteries," by Mr. Beck of the Electric Storage Battery Company.

Again President Savage was in the chair and the remainder of the meeting was under his direction. His call for committee reports brought responses from the credentials committee, the report being accepted and filed with the secretary, and from the nominating committee, which had the following thirty-two names on its role, seventeen to be chosen from them:

E. B. Fisher, Grand Rapids, Mich.; G. W. Robinson, St. Paul, Minn.; J. W. Callahan, Chicago; N. G. Hunter, Wabash, Ind.; Manford Savage, Champaign, Ill.; H. D. Critchfield, Chicago; Warren Pratt, Kearney, Neb.; J. B. Earle, Waco, Tex.; H. C. Todd, Marysville, Mo.; E. D. Schade, Johnston, Pa.; H. B. McMeal, Chicago; W. J. Thomas, Shelbyville, Mo.; Richard Valentine, Janesville, Wis.; C. Y. McVey, Cleveland; P. C. Holdoegel, Rockwell City, Iowa; F. B. McKinnon, Tonganoxie, Kans.; L. D. Kellogg, Chicago; A. G. Bean, Elyria, Ohio; W. H. Bryant, Mobile, Ala.; J. C. Duncan, Knoxville, Tenn.; Hart F. Farwell, Terre Haute, Ind.; D. M. Neill, Red Wing, Minn.; George S. Shanklin, Lexington, Ky.; W. J. Melchers, Owosso, Mich.; George E. Coddlington, Auburn, Neb.; Joseph M. Plaister, Ft. Dodge, Iowa; Albert Parlette, Bristol, Va.; C. E. Tarte, Grand Rapids, Mich.; J. C. Casler, Dallas, Texas; W. B. Grigson, New Philadelphia, Ohio; C. J. Garlow, Columbus, Neb.; H. B. Shoemaker, Toledo, Ohio; C. A. Shock, McKinney, Texas; H. E. Lindas, Great Bend, Kans.; J. W. Collins, Decatur, Ill.

The adjournment of the session until Thursday morning was then announced and the delegates scattered, later to reassemble at the evening's banquet.

And that event filled, to the utmost, President Savage's prophecy as to importance, for at no previous telephone convention was the banquet so big a feature. The attendance exceeded the four hundred mark, the menu was a palatable and substantial one and the program of talks and other numbers was especially enjoyable. Mrs. Sybil Sammis McDermid was the evening's soloist and vaudeville turns were enacted on an improvised stage by headliners from various vaudeville houses of the city—this through the courtesy of the Shuberts and their manager S. B. Gerson.

The toastmaster was J. W. Callahan, who played the difficult role to perfection. L. C. Griffitts with "The Telephone" as his subject was called upon, as also were Perry C. Holdoegel and "The Farmer-Telephone Man," W. S. Wilson of Eminence, Ky.; President Savage, who interspersed his telephone remarks with an abundance of real stories; Mr. Critchfield, with "The Progress of the Years and the Telephone, and E. B. Fisher in serio-comic remarks on the aspects of the business.

The Telephone Improvement Company saw to it that every banqueter received a souvenir in the way of a paper cutter finished in imitation French silver.

The business of the convention's third day began

with the report of the resolutions committee, the following being read by Chairman Hunter:

Resolved, that the hearty thanks of the National Independent Telephone Association are hereby tendered to the management of the Hotel LaSalle for the very courteous and efficient attention given the association, its members and visitors, during the convention.

Resolved, further, that we most cordially thank C. W. Winkler, commercial superintendent of the Illinois Telephone and Telegraph Company, and Sam B. Gerson, western manager for the Shubert Company, for the artists and the delightful entertainment at the banquet.

Resolved, further, that the annual address of the president of this association be published in pamphlet form and that 25,000 copies be printed for distribution and paid for by proper warrant drawn upon the funds of the association.

Resolved, further, that we hereby tender our thanks most sincerely to the Telephone Service Association for its hearty and earnest co-operation and the technical program given, thus contributing in a very material sense to the success of this convention.

Resolved, further, that the association acknowledges its obligations and tenders its thanks to the manufacturers both for number and completeness of exhibits and the uniform courtesies shown the association and its members and visitors from the beginning to the end of the convention.

These resolutions were voted upon and carried. Judge Hunter then offered the following resolution:

Believing that the co-operation of the National Independent Telephone Association and the Telephone Service Association may be advisable for the best interests of all independent telephone companies.

Be it Resolved, that it be the sense of this convention that a committee, consisting of three members of its board of directors, be appointed by the president, to meet jointly with a similar comilar committee from the Telephone Service Association to consider ways and means for the continuation of the work of the Telephone Service Association.

The motion was carried without debate. Another resolution was then submitted, as follows:

Whereas, the premiums charged by liability insurance companies are considered by many to be excessive and their methods of claim settlement frequently at variance with the best interests of the telephone plants, and

Whereas, an inter-insurance organization, known as the Utilities Indemnity Exchange, is in existence, confining its operations to public utilities, by means of which protection is afforded at cost and an amicable system of claim settlements employed; therefore.

Be it Resolved, that this association recommend to its members a careful investigation of the said Utilities Indemnity Exchange with a view to obtaining for themselves, and affording to others, the benefits of co-operation in the matter of liability protection.

"By way of explanation I wish to say," remarked Mr. Hunter, "that ordinarily any resolution that is for the purpose of especial recommendation of an independent business would not be respected by this committee; but this having for its purpose a general plan that probably will redound to the benefit of utility associations, whether telephone or otherwise, we feel that the resolution would not be amiss."

The technical program was resumed at the Thursday afternoon session, A. L. Staderman being the first speaker with a paper, illustrated by the stereopticon, on "Telephone Transmission." So fine was Mr. Staderman's talk, bespeaking infinite care in its preparation, that a motion was made and adopted that will mean the printing and circulating of the paper among independent telephone companies.

"Telephone Traffic," with W. S. Vivian and Harold D. Stroud as its sponsers, also received the adoption of a motion that it be printed and circulated. Ralph Starr Butler, assistant professor of business administration at the University of Wisconsin, went into his subject, "Some Phases of Efficiency in Business," but briefly owing to the lateness of the hour.

Before adjournment the results of the directors' election was announced as follows:

E. B. Fisher, Grand Rapids; G. W. Robinson, St. Paul; J. W. Callahan, Chicago; N. G. Hunter, Wabash, Ind.; Manford Savage, Champaign, Ill.; H. D. Critchfield, Chicago; Warren Pratt, Kearney, Neb.; J. B. Earl, Waco, Texas; H. C. Todd, Marysville, Mo.; E. D. Schade, Johnstown, Pa.; H. B. McMeal, Chicago; W. J. Thomas, Shelbyville, Ky.; Richard Valentine, Janesville, Wis.; C. Y. McVey, Cleveland; P. C. Holdoegal, Rockwell City, Iowa; F. B. McKinnon, Tonganoxie, Kans.; L. D. Kellogg, Chicago.

An announcement of a meeting of the directors on March 3 to elect officers was made and the sixteenth annual convention was over.

Wisconsin Association Meets

Madison was host to the Wisconsin State Telephone Association convention, February 12 and 13. The opening was made by John C. Gaveney, president of the Western Wisconsin Telephone Company of Arcadia and a former senator. He spoke strongly on the question of doing away with overhead construction, especially with telephone systems in small communities, the result being durability and the elimination of much expense. His own underground cable system in the 1,500 population towns of Arcadia and Galesville, served as instances showing how the overhead work was made to give way to an underground system.

A concrete bed made the conduits practically indestructible and Mr. Gaveney went on to show how the the building of manholes was a really simple undertaking, and advised arranging for two conduits, the extra one being for emergency or future capacity use. The cost of this work, he figured, would average fifteen and one-half cents per conduit foot and thirty-one cents per trench length foot; the other cost per lineal foot was less than fourteen cents. From end to end of the exchange systems at Arcadia and Galesville, a conduit extends and at the latter place the system was extended to the residence section so that every part of the whole district is thus reached.

"Definite Standards of Telephone Service" was the subject of a talk by John N. Cadby, of the engineering staff of the Wisconsin Railroad commission. His talk caused much discussion as it presented the first series of tentative rules for such service. Mr. Cadby suggested the printing of these rules on cards and the distribution of them. Mr. Cadby also spoke for the reduction of the numbers of subscribers on telephone lines, saying that with more than a small number on a line, good service is impossible. He stated his belief that the introduction of the parcel post would bring an increased demand for goods from the city and a corresponding increase in the utility of the telephone.

H. J. Dreher presented the attitude of the bankers towards the development of the telephone business. Mr. Dreher is manager of the bond department of the Marshall and Ilsley bank of Milwaukee and so good was his address that it will be printed and circulated among telephone interests.

The corridors and a number of rooms of the Park Hotel were given over to exhibition purposes and were

visited by the delegates preceding the banquet holding on the night of the twelfth.

The banquet attendance totaled two hundred and had as toastmaster W. L. Smith of Neillsville. Among those who responded to toasts were: J. B. McMillan of Tomah, Walter J. Gallom of Sheboygan, Mr. Crawford, Frank J. Mayer, district agent of the Bell at Madison, Frank L. Eldridge of Chicago, and S. M. Pederick of Ripon. A. H. Haskins entertained with some Swedish dialect stuff and L. W. Burch of Madison did a German paraphrase of "Barbara Freitsche."

The Thursday session opened with a talk on what the Central States Telephone Service Association has accomplished. The speaker was Frank L. Eldridge . A resolution favoring an investigation into the working plan of the Service association was adopted by the convention with a view to its later association by the members of the Wisconsin body. "Success and Failure in the Telephone Business" was the subject of a talk by Joseph Edwards of Elroy, who has had many years of telephone experience. Frank J. Mayer, district manager of the Wisconsin Telephone Company at Madison, gave a stereopticon lecture on "Telephone Plant Maintenance," after which the lecture laboratories of the University of Wisconsin engineering building were visited.

The Minnesota Convention

A two days' holding marked the convention of the Minnesota Independent Telephone Association at the Ryan Hotel, St. Paul, Minn., on January 28 and 29.

The meeting was called to order at 2 o'clock on the afternoon of the first day with President Clark of Bellingham in the chair. He presented Mayor H. P. Keller, of St. Paul, who extended the delegates a hearty welcome to the city. Then followed President Clark's annual address and the appointment of a committee of five on resolutions. During the absence of the committees Manford Savage, president of the National Independent Telephone Association, was heard from in a worthy address.

The following resolutions, unanimously reported by the committee, were adopted by the convention:

Be it resolved, That it be declared the sense of this Association that we go on record as favoring the Minette-Rockne utility bills, relating to telephone companies, and that if a general utility bill be passed, then that in such case that bill should contain the following features, exactly as they are contained in the Minette bill (H. F. 73):

(1) That the bill should provide for a physical connection of toll lines, exactly as stated in the Minette bill, making the necessity for such connection presumptive in each case, and throwing the burden of overcoming such presumption upon the opponents of the connection.

(3) That the bill should not allow a merger of telephone companies, either by plant or stock sales, or by working arrangements, result of which would directly or indirectly stifle or tend to stifle competition.

(4) That we favor the referring of these matters to the Railway and Warehouse Commission, in the interests of economy, and also because of the fact that the Railway and Warehouse Commission has had experience in the regulating of public service companies, and that they have expressed themselves as being able and willing to undertake the work and because we believe there is no necessity for loading the state government with another commission, with its necessary additional salary and expense accounts.

Five o'clock was the banquet hour and the event was one of much conviviality. D. M. Neill was toastmaster and among those who responded to toasts were Manford Savage and President Clark.

Thursday morning was spent in a visit to the legislature, which was in session, and the reopening of convention business was not until 2 p. m.

Frank L. Eldridge, secretary and field manager of the Central States Service Association, was heard from, as was also Mr. Barry of the Tri-State. Mr. Knell of the Tri-State gave a technical talk on long distance service and the value of phantom circuits for toll service.

The association voted for the return of the old officers for the ensuing year. Owing to ill health and press of other interests, the president protested against serving for longer than sixty days, so at the end of that time, W. S. Clay of Hutchinson, first vice-president, will serve in his stead. The officers are as follows: President, Lucius F. Clark; First Vice-President, W. S. Clay; Second Vice-President, George Occobock; Secretary, A. C. Buck; Treasurer, P. M. Ferguson.

The committee on resolutions, in addition to the report on the telephone bill, submitted the following, which were carried unanimously:

(1) *Be it Resolved*, That this Association shall be composed of members who represent telephone companies independent of, and not owned or controlled by, the American Telephone and Telegraph Company, directly or indirectly; and no person or company shall be eligible to membership in this Association who represents a telephone company in which the American Telephone and Telegraph Company or any of its associated or affiliated or allied companies control, or hold substantial financial interest; and in the event that any such interest or control shall be acquired by the American Telephone and Telegraph Company or any of its associated or allied companies, the membership so affected shall immediately cease, and that the passage of this resolution be deemed notice that at the next annual meeting a motion will be made to amend the constitution to include this definition of membership.

(2) *Be it Resolved*, That this Association extend a vote of thanks to the manufacturing and sales corporations for their courtesies extended the members of this Association and in the banquet served those in attendance, and that their efforts in preparing their attractive exhibits have been appreciated.

(3) *Be it Resolved*, That a vote of thanks be extended to our president, Mr. Clark, our secretary, Mr. Buck, and to the other officers of the Association for their untiring efforts on the behalf of the Association, and that we particularly appreciate their work in the publication of the *Message*, and in their efforts along legislative lines.

(4) *Whereas*, We believe that the efforts made to publish the *Message* should be appreciated by other than a vote of thanks, and whereas the advertising in such magazine does hardly do more than cover the cost of publication, therefore

We recommend that the Executive Committee be advised that it is the sense of this Association that in the event they deem the finances of the Association warrant the same, that at least one hundred dollars be paid Mr. Buck in 1913, not as a payment, but as an appreciation of his efforts in so publishing and editing the *Message*.

In Touch With World Through Telephone

Interesting and of considerable value to the people of the mountain states is a new map which was recently issued by the Mountain States Telephone and Telegraph Company showing the telephone lines of the company in the seven states which are covered by the operations of the Mountain States Company. Of peculiar interest to the public is the fact that the new map shows a great many towns isolated from the outside world excepting for the connections which are afforded by the telephone lines. Through this development of the country given by the telephone, even the most remote of the communities of the west are brought into close touch with the world, and in this one particular alone the Mountain States Company is doing a magnificent thing for the country, how great, an inspection of the new map will demonstrate.

The Telephone Scrap Book

DOLLAR SCRAPS.

"Scraps" suitable for this department will be paid for at the rate of one dollar each. Each scrap must have at least one illustration, for which a rough pencil sketch will suffice. Practical kinks for workers are most desired, although any original matter that is really interesting is acceptable. A kodak snap-shot with a few words of explanation may be just as satisfactory to the editors as a long article. Unused scraps will be returned, and the used ones will be paid for after publication.

Frog's Leg as Wireless Receiver

GALVANI'S well known experiment, which in spite, or rather because, of its being wrongly interpreted, gave rise to the development of galvanic electricity, has become a familiar classroom demonstration, especially in lectures on physiology. A peculiar use has been recently made of the phenomenon by adapting it to the recording of electro-magnetic waves such as used in wireless telegraphy.

Dr. Lefeuvre, professor at the Medical High School of Rennes, has, in fact, devised the following arrangement for recording the contraction of a frog's muscle as

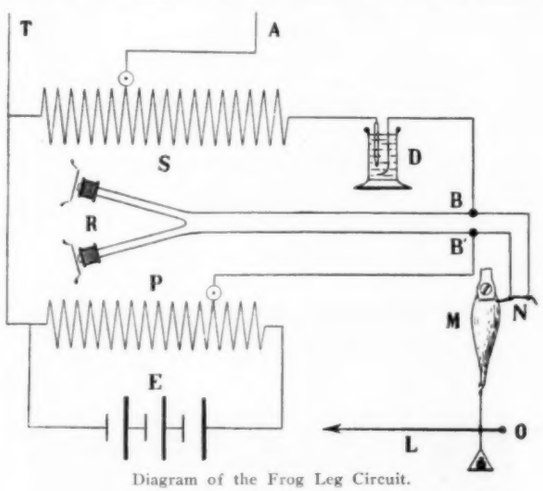


Diagram of the Frog Leg Circuit.

produced by the passage of an electric stimulus through a motive nerve:

The muscle *M* is solidly fixed in its upper part by means of a pair of tongs, as shown in Fig. 1. The end of the sinew is connected by means of a wire to a light lever *L* pivoted at *O*. This lever is returned to its initial position, after the contraction is completed, by a weight suspended from it, and the end of the lever, which carries a fine point, bears against a rotating smoked cylinder. At the very moment the muscle is excited through the intermediary of its nerve *N*, the contraction curve, enlarged by the lever, is recorded faithfully on the smoked cylinder. While many cold-blooded animals can be used for this experiment, the muscles of frogs' legs are particularly well adapted for the purpose, on account of the regularity of their form, the long duration of their excitability and the special ease with which they can be severed from the body.

So far from severing the muscle completely from the body of the animal, it is, however, preferable to leave it in position, cutting the "Achilles" sinew at its junction, and fixing it to the wire connecting with the lever. In this case, the central nervous system of the animal should, however, be destroyed, lest the experiment be disturbed by motive reflexes. The sciatic nerve is dissected over a short distance at the level of the thigh, and is lifted by means of the hooks of wire supplying the electrical stimulus.

This neuro-muscular apparatus is so extremely sensitive to electric stimuli that it can be used as a sensitive galvanoscope, allowing the very slightest electric variations or waves to be detected. In the arrangement above referred to it further affords the advantage of allowing its readings to be recorded. It can actually be employed in the following arrangement for the receiving and recording of wireless signals.

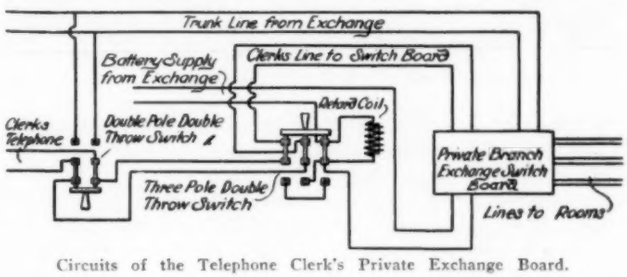
The receiving station comprises the following: *E* is a battery of three ceels, *P* a potentiometer allowing the voltage in the receiving circuit to be controlled, *S* is a tuning coil to which the receiving antenna *A* is connected, *D* an electrolytic detector, and *R* two high-resistance telephone receivers connected up in series.

To the terminals *B*, *B* of these telephones are connected, in shunt, two wires applying the electrical stimulus to the nerve *N* through the intermediary of small metal hooks. The excitation of the nerve is due to the self-induction currents produced in the coils of these telephones.

Hotel Clerk's Private Exchange Board

IN a hotel having a private branch exchange using direct current telephones, i. e., transmitter and receiver in series, the switchboard is located behind the cigar counter entirely across the lobby from the clerk's desk, says Maurice E. Young in *Popular Electricity*.

When the operator leaves at night she turns on the



Circuits of the Telephone Clerk's Private Exchange Board.

night alarm and throws the three pole, double throw switch shown in the accompanying diagram, which allows sufficient current to flow through the clerk's instrument to enable him to ascertain the wants of any guest who may call him after that time. He can see the switchboard from his location and if it is the trunk line from the city exchange which is flashing he throws

the double pole, double throw switch shown and places himself directly on the trunk.

Of course if one guest desires to talk to another or to a party in the exchange the clerk must go and put up the connection, but as a majority of the calls are for ice water or of that nature he saves many unnecessary steps.

Setting Poles by Machinery

THE accompanying illustration shows a scheme for setting poles by machinery as developed at Westfield, Mass. The equipment used consists of a locomotive, reel car, derrick car and pole locating car. The reel car is a platform car on which was bolted a heavy reel stand holding the six reels with one mile of wire per reel. A

Stringing Wires from a Railroad Car.

uniform tension is secured by placing a band brake on each reel, which is adjusted by spring tension.

It will be seen that the derrick car consists of a standard hoisting outfit, a heavy derrick with 50-foot boom for pole setting and a 20-foot extension to the boom for wire stringing. The extension piece carries on its outer end a cross arm holding six single blocks through which the wires passed directly from the reels.

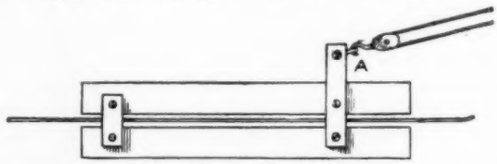
The pole locating car is a flat car to which is bolted a wooden frame carrying an adjustable arm for accurately locating the poles. The poles used in the photograph are 50 feet in length, setting 3 feet in the ground, each carrying an 11-foot four pin arm and 9-foot two pin arm besides the feeder telephone and trolley.

It may be stated that in this installation the poles were fitted on the ground with arms, braces and wire attachments. The regular pole setting crew consisted of 10 men, all laborers except the foreman, and set four to five poles per hour.

In this electric power system the six transmission wires used were stranded "O" for 33,000 volts and four men exclusive of locomotive and hoisting would string 16 miles per day without a lineman except for splicing. The wires run from the reels through the six blocks on the boom extension and were layed directly on the pole crossarms. They were pulled to proper tension with a six wire equalizer, then tied to insulators by the lineman so far as possible with one climbing of the pole. After the transmission and feeders were strung the brackets and trolley wire were placed in the usual way.

A Simple Wire Gripper

THIS gripper, described by *Popular Mechanics*, is a simple device and can be easily constructed as shown in the sketch. Two pieces of oak, 10 inches long, 1 inch wide and ¾ inch thick, are linked together with four pieces of metal, two of them 4 inches long, and two, 6 inches long; all being ½ inch wide and ¼ inch thick.

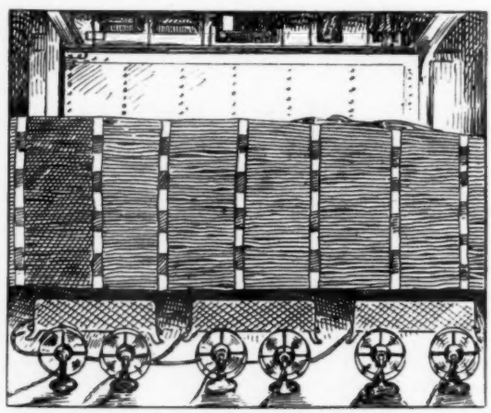


Easily Made Wire Gripper.

Large screws or bolts are used to connect the parts. A bolt is run through the ends of the two long pieces of metal at A. The tackle is connected to this bolt and the end of the wire placed between the pieces of wood. As the tackle pulls on the device, it grips the wire tightly without danger of damaging the insulation on the wire.

Drying Telephone Cables

DURING a recent fire in a telephone exchange the water thrown saturated the cables at the back of the switchboard. To dry these out electric car heaters were borrowed from the car company and the heat



One Way of Drying Telephone Cables

generated by them blown upon the cables by electric fans as shown, says *Popular Electricity*. This was considered to be the only feasible means, as great care had to be exercised to prevent the melting of the paraffin used in the cable insulation.

The Law and the Telephone

By E. J. Wenner

IS A FARMERS' MUTUAL TELEPHONE COMPANY A PUBLIC SERVICE CORPORATION?—COURT DOES NOT DECIDE THE QUESTION—REASONABLE REGULATIONS OF THE COMPANY—DUTY TO FURNISH SERVICE.

THE Hawk Creek Telephone Company was incorporated under the provisions of the law of the state of Minnesota, for the purpose of establishing and constructing a rural telephone line leading from the village of Sacred Heart to the homes of the incorporators. Though the corporation was formed under the provisions with reference to companies for pecuniary profit, it was not intended that this company should pay a dividend to the stockholders. It was formed for the purpose of affording its stockholders telephone communication over the lines constructed. The corporation adopted certain rules and regulations covering the affairs of the company and the admission of its members. Each party in interest was required to pay $50.00 into the treasury of the company and one share of stock was issued to him. The money paid was for the purpose of defraying the stockholder's proportionate share of the telephone line, instrument, etc. Later an additional $10.00 assessment was levied upon the stockholders. At a later time, and after the line had been constructed, a regulation was adopted allowing for additional shareholders upon the payment of $60.00. This payment entitled the purchaser to a connection with the company's line, a telephone instrument, three telephone poles and connected the instrument with the line of the company. The member was required to furnish all wire and do all construction work up to the point of connection with the line of the company. No other revenue was provided for and the only charges in addition to maintenance were the switching charges made by the local telephone company in the village.

The company constructed two lines known as line No. 1 and line No. 2, and by rule limited the number of subscribers upon either line to fifteen. Line No. 1 had its full allotment and line No. 2 had but eleven subscribers at the time when two parties living in the vicinity petitioned for connection to line No. 1. These parties lived nearer line No. 1 than line No. 2, and could have connected with the former for about $88.00 less in expense than with the latter. The company offered them connection with line No. 2. This they refused and claiming the refusal to connect with line No. 1 was wrongful, brought a proceeding in court to compel the company to comply with their request. The district court denied the relief demanded and an appeal was taken to the supreme court.

A number of questions were presented to the court, but it seemed necessary to decide only one. The court does not pass upon the question as to whether or not the telephone company in question is a public service corporation. It is stated in the opinion, however, that for the purpose of the case it might be conceded that it is such. Counsel for the company, however, earnestly denied that it was such a corporation and urged that it was not organized for pecuniary profit. In the course of the opinion the court said that it was not necessary to pass upon this question, for even if it were such a corporation the relators were not entitled to the particular relief demanded. The company had offered them a connection with line No. 2, and the most the relators can claim is that the company is under legal obligation to afford them facilities for telephone service equal to others similarly situated. By offering to connect them with line No. 2 the defendant performed its legal duty.

It appeared from the findings of the lower court that line No. 1 supplied service to fifteen subscribers, the minimum number provided for by the rules of the company. To connect more patrons with line No. 1 would interfere with the service rendered the subscribers already on such line. Line No. 2 would afford the service requested and the relators are not prejudiced by the fact that it would cost them more to connect with line No. 2 than it would to connect with line No. 1. The company is not responsible for the geographical location of the relators, and could not in any wise be charged therewith.

The relators claimed that three subscribers could be transferred from line No. 1 to line No. 2 without material expense, and that such a change should be made giving them an opportunity to connect with line No. 1. The court held that this was a matter resting in the sound judgment and discretion of the company, and it was under no obligation to change subscribers from one line to another to make room for those who could as well connect with the line in question. The offer of the defendant to allow relators to connect with line No. 2 is a full discharge of whatever legal duty the company owed them. The order of the court below was affirmed.

State ex. rel. Sagness et. als. v. Hawk Creek Telephone Co., 139 *N. W. Rep.* (*Minn.*), 711.

PROFANITY IN A TELEPHONE CONVERSATION NOT ACTIONABLE.

Profane and harsh words directed over the telephone are a very uncertain basis for damages an account of fright, shock and humiliation. This is the opinion of the state supreme court of Iowa, as expressed in a ruling in the case of Nettie Kramer against Henry Ricksmeier. The case was appealed from Franklin county by Nettie Kramer. She alleged that the defendant spoke harshly to her and swore at her over the telephone when her husband was away from home, because her husband had let some cattle loose that were damaging his property.

The text of the decision in this case will be available before the next issue, and it is the intention of the writer to fully review this decision. It probably contains many novel questions.

NEGLIGENCE IN CONSTRUCTING TELEPHONE LINES—INJURIES TO THIRD PERSON—CONTRIBUTORY NEGLIGENCE—QUESTION FOR JURY.

The plaintiff, John P. Balderson, brought action against Portland Telephone Company in the district court of Ionia county, Michigan, claiming damages to a certain team of horses owned by him. Plaintiff is a farmer

living near the village of Portland. The defendant operates a telephone exchange in Portland and in the country surrounding. In 1910, it was engaged in building and extending its telephone lines upon the highway in front of plaintiff's barn and residence. Two large trees on the highway line were cut because of interference with the proposed telephone line, and after the wires had been strung loosely from pole to pole they had been allowed to sag to the ground between the poles. The plaintiff was using his team in hauling the trees away. While engaged with a saw he allowed the team to stand idle, and it so happened that they stopped immediately over the slack wires. At that moment the linemen, something over a mile away, started tightening the wires. They were drawn up under the horses in such a manner as to cause them to be frightened and they became entangled. The horses were injured and an action was brought to recover damages on account thereof.

In the trial of the case it was shown that the defendant was guilty of negligence in failing to give plaintiff notice that the wires would be lifted. The defendant contended that the plaintiff was also guilty of negligence and on that account could not recover from defendant. The trial court directed a verdict in favor of defendant on the ground that plaintiff was guilty of contributory negligence.

The supreme court in its opinion reviewed that portion of the evidence tending to show the plaintiff guilty of contributory negligence, and after doing so concluded that the question of plaintiff's contributory negligence is one of fact and should have been submitted to the jury. The court adds, however, that proper instructions should have been given in order that the jury should determine whether or not the plaintiff was guilty of contributory negligence, and, if so, no recovery should be allowed him.

Balderson v. Portland Telephone Co., 139 *N. W. Reporter (Mich.)*, 7.

INJURY ON HIGHWAY—RIGHTS OF TRAVELERS—LOW TELEPHONE WIRE—NEGLIGENCE—CONTRIBUTORY NEGLIGENCE.

Rudolph Stuhr brought action in the district court of Wright county against the Wright County Telephone Company, claiming damages on account of injury received through the alleged negligence of the company.

Plaintiff was driving a traction engine to which was attached a threshing machine. The smokestack of the engine came into contact with the wires of the defendant company, which wires had become slack and were hanging low. Some member of the crew called to the plaintiff immediately after the stack had struck the wires, and he stopped the engined and went forward on the running board to investigate. The wires broke and threw him to the ground and severely injured him.

The defendant claimed the plaintiff guilty of contributory negligence and sought to defeat his recovery. The jury awarded him $2,450.00, and the defendant claimed the amount to be excessive.

The case was taken to the supreme court on the theory that the evidence showed plaintiff guilty of contributory negligence in that after he stopped the engine he went from a place of safety to one of danger. The supreme court is of the opinion that the testimony shows the plaintiff did not know of the dangerous condition of the wires and did not learn of it until he was within a few feet of them and at the time they broke. The evidence shows that when plaintiff discovered the danger of his position he made an effort to return to a place of safety, but was injured before he was able to do so. Such being the case the plaintiff was not guilty of contributory negligence, and was allowed a recovery.

Upon the question of the excessive award the supreme court held that the instructions of the court below were correct, and that the jury might take into consideration, in addition to damages for personal injury, any loss resulting directly from his injury. After reviewing the evidence as to the nature of plaintiff's injury the supreme court said: "A consideration of the whole evidence leads us to the conclusion that the award of damages was liberal, but not so excessive as to justify any interference with it by this court."

Stuhr v. Wright County Telephone Co. (Minn.), 138 *Northwestern Reporter*, 693.

Steel Rails Used as Telephone Poles

In the telephone system of the canal zone steel rails are used as poles. According to a correspondent of the *Telephone Review*, wooden poles cannot be maintained any great length of time on account of the ants that will cut into a wooden pole, and before long leave nothing but the shell.

Creosoted cross arms are used as a protection against these pests.

"I might relate one instance," he writes, "where even the ants discovered the value of having a telephone in the house. They had followed the twisted pair into an office building and into the bell box, which was fastened to the side of an oak veneered flat top desk.

"They bored through the bell box into the interior of the desk and had removed practically the entire pine wood of the interior, when the desk suddenly fell to pieces.

"These busy ants, in their operations, when they feel that their presence might be discovered, construct a kind of a tunnel of mud extending along the floor beams for the entire length of the building and come and go through this concealed passage.

"One of the construction difficulties encountered has been the maintaining of the pole line through some of the swampy regions. In several instances the poles of railroad iron have gradually sunk into the ground until it became necessary to splice on an additional rail, and, in some places, three such sections of rail have been found to sink down in the swamp while only 20 or 30 feet remained above the surface."

Telephones in Metal Mines

The committee on standardization of electrical equipment in metal mines reported to the American Mining Congress on the subject of telephones as follows:

Telephone Systems.—Rule 32.—All mines from which exit is by shaft only, and all others in which the working places extend more than one mile from a place of exit, shall be provided with an underground telephone system, provided the number of underground employees at any one time on the regular working force exceeds 25. The system shall be of approved construction, and of such extent that no working place shall be at a greater distance than three-fourths mile from a telephone, and principal shaft stations shall be provided with telephones.

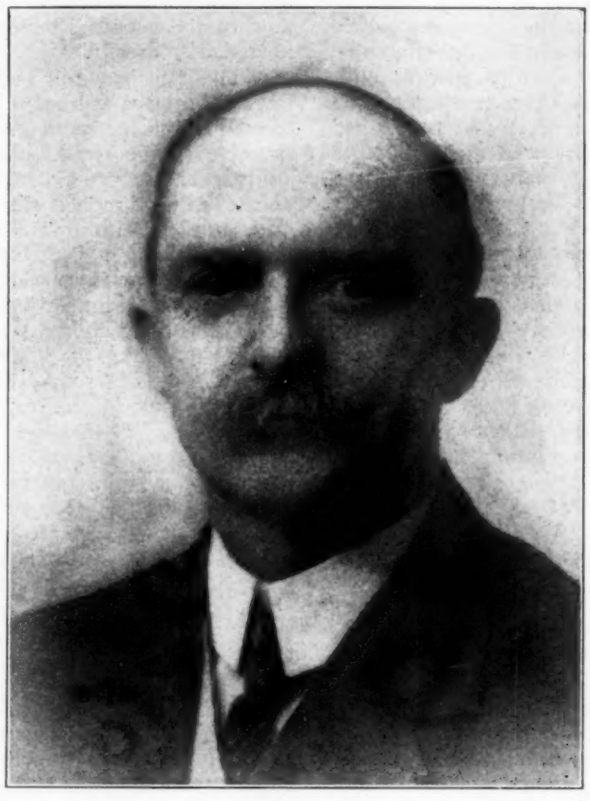
All main telephone cables shall be insulated with waterproof insulation, and unless run through metal pipes or casings, or approved conduit, they shall be protected by a continuous lead sheath.

Eliminating Both Monopoly and Warfare

By Manford Savage

PRESIDENT-ELECT WILSON said, in speaking of the present time: "It is plainly a new age. The tonic of such a time is very exhilarating. It requires self-restraint not to attempt too much, yet it would be cowardly to attempt too little."

That statement applies with almost irresistible force to the telephone business and all connected therewith. It is a concrete expression of the ideas of many telephone men who have been able to free their minds from the vexations of actual operation long enough to bestow some thought upon general conditions now existing and what we may reasonably expect from the future.



Manford Savage.

Laws controlling public service corporations vary widely in different states and in some there are constitutional provisions which do not apply to the rest of the Union. It is not within the province of a national association to interfere with purely local matters. Experience in the past has demonstrated the utter futility of such a course. Only a few years ago, certain operating companies and manufacturers contributed to a fund which, in the aggregate, amounted to a large sum of money and used it along aggressive lines to cure bad local conditions. The results were so negative as to convince at least those who were furnishing the sinews of war, that the benefits did not equal the cost.

A year ago your president took a somewhat optimistic view of the outlook for the telephone business generally and expressed the belief that somewhere there could be found well defined spheres of operation in which both independent and Bell companies could operate without friction to great advantage of both systems. In that suggestion there was no thought of a regulated monopoly which should swallow its adversary. I ventured to express the hope that a new era was about to dawn when arrogance, born of centralized capital and management on the one hand and destructive competition on the other, would no longer prevail in the telephone business, but rather intelligent co-operation under some form of government supervision that would give to those in the business permanent security, and adequate returns and full protection to the public. The co-operation I had in mind was not an agreement fixing rates, nor did I contemplate any course of procedure which would result in forcing any individual firm or corporation to get out of business which wanted to remain therein. It was simply an expression of a firm belief that war never settles any issue and that it is as foolish and as great an economic mistake to wage it in the business world as it is between nations. In fact, war in any form is an enemy to the progress of humanity and gives the lie to the intelligence of God's creatures.

Twelve months have gone by since our last meeting and, from information obtained from various sources, I am forced to conclude that the statement of the dawning of a new era was somewhat altruistic. No progress of note has been made towards a general adjustment of unfavorable telephone conditions; so far as I am informed, there has been no serious attempt to work out a country-wide plan.

There are many reasons for this lack of progress. Some of them are political, some legal and more of them personal. The presidential election caused a timidity in certain circles. New statutes were enacted creating commissions controlling public utilities with duties and powers of boards illy-defined and, in some cases, with the law so obscurely worded as to make the best commissioners proceed with extreme slowness until they knew where they were. Frequent decisions by the courts on questions affecting particularly common carriers and the status of those in control of them, demanded the exercise of the utmost caution.

But above and beyond these, to my mind, the one thing that has prevented putting the telephone business on a better and more enduring basis generally, has been the attitude of the parties most concerned towards each other. There has been, it seems to me, on the part of some an entire failure to recognize fully present conditions and the causes which produced the same. One party claims to believe in evolution, but that belief is founded upon an unalterable conviction that somewhere away back in the protozoan age, a particular shaped cell became agitated with basic telephonic knowledge and from that original cell has been evolved a system within which is contained all that the human mind knows or can acquire concerning the technical, commercial, operating, financial and political conditions affecting the transmission of the human voice over wires.

It is hard to convince those whose creed is, "We have done it, therefore, we can do it," that they must yield to changed conditions, and, in this connection, it is well to remember that an intimate acquaintance with

local conditions and close touch with the people is frequently of more value than the highest technical knowledge. The assumption that there is exclusive knowledge is false. Men vary in ability and in opportunity, somewhat, but a conviction is taking hold of the American people so generally and so firmly that it may rightfully be called public opinion, that, in the industrial world, there are no men of such transcendant ability that they may be called geniuses. From the evidence produced in courts and from facts brought to light in congressional and state investigations, a great majority of the citizenship of this country are now convinced that marvelous success in business and unequaled financial achievements are the results, not so much of unusual brain power, fortunate circumstances or native or acquired ability, as they are of an immeasurable power given by unfair use of resources not belonging to the captains of industry—an unjust manipulation of capital and speculation with funds not their own.

Improved vision giving the power to see the situation as it is on the part of the public, is accompanied by a determination that a concentration of the resources of the republic in the hands of a few shall no longer exist in this country. The law-making power and the law-enforcing power will unite to bring about conditions that will make it impossible for the United States to again produce a Rockefeller or a Carnegie. Neither will it be permitted that eleven men, by their control of billions of other people's money, shall say what industries shall be nourished and grow and what shall starve and die.

It is a part of life that some shall reap where they do not sow, but when those who reap where they have not sown claim the larger part of the crop, then this kind of agriculture which consists in farming the farmer will stop as soon as the farmer knows he is being farmed. In the past generation, he has been so tired that he slept too much. He is now waking up, opening his eyes, stretching his arms a little and taking hold of things and already you can see his determination to remedy a wrong. The method of handling the surplus wealth of the nation is to be changed and the scoffer who insists that the custom is fixed upon immutable laws of finance and that the present attitude of the people is only a temporary wave, will be in about the same fix that Noah's contemporaries were who did not think there was going to be much of a shower.

A general belief having all the tremendous force of conviction exists that there has been developed in recent years a financial system that is bad for the nation. And this conclusion is not dependent upon the success of any political party. You find just as many republicans as democrats and just as many democrats as progressives determined that the money of the country that can be used in legitimate enterprises, at fair rates, shall no longer, by unfair methods, be concentrated in a few localities to be used by those who do not own it to reap a profit based upon the gambler's hazard.

It will not be denied that the value of many stocks is not dependent upon success of operation or economy of management. They are tossed up or borne down at the will of financial jugglers, whose power and skill are derived from the use of the people's money, supposed to be deposited only for safekeeping or the funds paid in to protect the family, or as a security against the misfortunes of old age.

There has just been completed at Keokuk across the Mississippi River, one of the most wonderful dams in the world to control the flow of the Father of Waters, and make it serve the people in that territory. In the near future, a legislative dam will be constructed that will, to the great advantage of legitimate investments near the owners of the funds, prevent the unrestricted flow of the people's money into the gambler's reservoir in distant places.

This will prove of great benefit to telephone securities in two ways at least: First, they will no longer have to compete in the money market with stocks that have a fictitious value placed upon them as available hazards for gambling; second, there will be left in the home market funds for legitimate investment now sent to distant places by custom and the drawing power of a gambler's percentage.

Again, the future will lessen the importance of a legal bureau composed of shrewd lawyers who, in the past, have spent most of their time and talents as legal pilots instructing the clients how near they can sail to the reef where there is danger if not destruction to cargo and passenger, instead of putting out in the open where is safety for all concerned. In the light of recent decisions and taking into consideration the temper of lawmakers, it is quite apparent that legal acumen can construct no device that can be successfully employed, or which tends, to create or perpetuate monopoly.

We may go further and say there will be permitted no fine distinction as to what is competition and what is monopoly. The rule of reason will be as effective as a sword of offense as a shield of defense. Simplicity of pleading and rapidity of procedure will be enforced by the courts and a defense based upon delay and the expense to the opposite party caused thereby will not be tolerated, as is clearly shown in the revision of the rules of the highest courts in the land.

We are business men dealing with business matters. But as the creator may prescribe the rules under which his creation may exist, would it be too drastic to amend the bankruptcy act so that, if a corporation, called into being under the provision of some law, should be guilty of unfair competition, discrimination between individuals or communities or any other act prohibited by law, such unlawful act or acts shall operate to declare the offending corporation an involuntary bankrupt and call for the appointment of a trustee to wind up the affairs of the concern and sell its assets to the highest bidder and render its charter forever invalid?

The security buyer would then purchase with knowledge of the law and we would capitalize the integrity and law abiding character of corporate officials. Those charged with conducting the affairs of the corporation would recognize that to permit unlawful acts meant the end of the concern. Such a law would be much more effective as a preventive of unfair and unlawful practices than fear of criminal prosecution on the part of officers and agents, because it rightfully would endanger the life of the corporation which profited by the unlawful acts of its agents.

It is no easy task to frame fair and adequate laws to meet actually existing conditions. As independent telephone men, we shall be called upon to take part in the work. We cannot disguise the fact that we are divided into groups or classes. First, we have the purely mutual companies, that, as a rule, only desire to furnish temporary talking facilities, irrespective of cost. Then we have some of the best and truest independent tele-

phone men connected with commercial companies, who have a fixed and almost unalterable opinion, born of experience, that the leopard cannot change its spots, that unceasing warfare, or at least armed neutrality, coupled with eternal vigilance, is the price of independence and that keeping the war chest well supplied is a legitimate and necessary fixed charge upon every independent telephone property.

There are others who are just as true, just as honest and just as capable independent telephone men, who believe that evolution, which has produced a public sentiment against undue concentration of financial power and a determination that all forms of oppression and unfair discrimination in the business world shall cease, has also produced conditions where fighting tactics and the drain of the war chest, which have produced uncertainty, hampered development and prevented adequate financial returns in the telephone business, need no longer exist.

Some of us say, while not advocating drastic or unfair methods, that, if the disposition of courts and the tendency of legislation, both reflecting the will of the people, is to refuse to tolerate monopoly, then conditions must remain as they are in the telephone industry.

I do not agree with this. I do believe that the sentiment in favor of regulated monopoly is not so strong as it was a few years ago, and that the drift of opinion is decidedly the other way. Personally, I am quite as sure now as I was a year ago, that the telephone business in this country can be so adjusted along lines that are perfectly legal that there will be neither monopoly nor war. I never did subscribe to that bewhiskered dictum, now in its dotage, that the telephone is a natural monopoly. But even if it were true, I do not see what bearing it has on the case, because nature gave to man the instinct and therefore the right, to take whatever he desired from another by force, and it has been the fight of civilization to take away that natural right from the individual by law.

I am unable to see why there may not be communities or localities where competition would be lost, both for the user and those engaged in the business. Of course, I mean decent competition, such as you find in other branches of business. It is not an unusual experience for a concern to have more business than it can properly care for. A telephone company with lines so congested or facilities so overtaxed that it cannot put in a telephone for weeks and sometimes months after it is ordered, has more business than it can properly care for. Actual experience has placed a limit upon the size of any concern that can be profitably operated.

It was not necessary for the supreme court to decree the dissolution of the Harriman roads—the system would have soon fallen apart from its own weight. The conduct of a great railroad now involves, in the opinion of the greatest men engaged in the business, a complexity of human, industrial and social problems. These facts are clearly recognized in the recent election of railroad presidents, all of whom have been chosen from men who have worked up in the ranks.

After a success in consolidating or combining not paralleled in the last century, doubtless Mr. Harriman saw the futility of successfully operating with all power lodged in one head remote from the scene of operation, although the location might be at the financial center of the country. He said frequently before his death, that railroad officers, especially presidents, ought to live close to the people they serve and be in intimate touch with them.

Now, what has been said in reference to the railroad business applies with much greater force to the telephone business. Telephony is much more closely connected with the industrial, social and personal life of the people than railroads or any other form of public utility. A thousand and one emergencies arise that can be met only by those having authority to meet local conditions with peculiar remedies that may not apply to other cases.

It is just as absurd to insist upon a universal telephone system as it would be to insist upon a universal diet. Local ownership and operation are inseparably connected with an inherent part of telephony. You may consolidate independent companies until you have one huge concern with a capital large enough to provide against every contingency, and to employ those possessing the highest technical skill in every branch of the work, and still in a few years, if you have gone beyond the point where local influence is felt, new and smaller companies will arise and that in spite of the provisions of laws prohibiting a second utility. This is because public opinion, which makes and changes laws, is composed of the consolidated local views on any subject, and in making laws, the colonel from the rural districts has quite as much influence as the captain of industry from the metropolis.

In this respect, the telephone business is not different from farming. After numerous experiments all over the country, the weight of opinion is decidedly that large farms do not pay and they are being cut into small ones every year. Neither statutes nor decisions compelled the cutting up of these immense farms, but the inevitable law of farming operation forced it. I am quite convinced that the same thing is inherent in the telephone industry. We can be no more successful under economics or under the law in undue concentration than can the Bell. All fair telephone men will coincide with the opinion of Judge Taylor in the United States telephone case recently approved by the court of appeals, in which he says: "Monopolies all look alike to the law. It does no good to destroy one monopoly by creating another, neither is it permitted to accomplish a righteous result by unrighteous means. We are equal under the written law and under the law of economics."

Frequently civil remedies for an acknowledged evil are so drastic in character and so manifestly inequitable that neither the courts nor permanent public opinion will sustain them. I know there are those who believe that they have the power to combine legislative thunder and judicial lightning in such a way that fright inspired by the terrific display will accomplish the desired result. I do not believe that the professional agitator can conjure up a cloud that will do much damage. He may compound a chemical mixture that will make smoke and rather a bad smell, but the profit to those who employ his arts will be about as small as the dividends realized by the farmers of Kansas and Nebraska who used to hire the professional rainmaker to bring down showers to break the drought.

Again, legislation adequate to the times is not affected by the demagogue. To stand openly for a principle adverse to popular right is bad, but to prey upon the evil in men's hearts and stir up hatred and revenge for selfish motives is worse. It has been suggested that the gentlemen who draw a bill to destroy trusts at one blow had better draw it on the plan of the Kentucky

hunter who was such a good shot that he could so sight his rifle that it would kill the object if it were a deer and miss it if it were a calf.

Largely through the influence of independent telephone men, Congress extended the jurisdiction of the Interstate Commerce Commission so that it had control of telephones so far as interstate business is concerned. And a majority of independents, at least, both manufacturers and operators, favoring the control by properly constituted state commissions, composed of fair men under statutes preventing all forms of preference and discrimination between individuals and communities and such anti-discriminatory features to apply to manufacturers as well as to operating companies, we are not only greatly interested in the character of these state laws, but it is of the utmost importance to us that the powers and the duties and the scope of the Interstate Commerce Commission, in so far as they relate to the telephone business, be clearly defined.

The law should not be left to interpretation or construction. It should first state plainly what kind of business is necessary to be done by a telephone company to bring it under the control of the Interstate Commerce Commission. This is not an easy thing to do in justice to all. I know it is insisted by many that the good of the public demands that all companies that touch a message that passes interstate from its origin to its destination, should be subject to regulation by the national government. Much of this insistence, when traced to its origin, shows that it arises from the desire of some one to have records kept that may be accessible for use and in the aid of the accomplishment of purposes that are local or intrastate.

I assume that as representatives of a single industry we shall not be expected to array ourselves on either side of the line of cleavage that has separated the political thought of this country from its birth, namely whether the state or the nation shall be supreme. Perhaps it would be wise to let that question alone. Broadly and substantially our business is much more easily divided into intrastate and interstate than is that of the ordinary common carriers.

It is the rule with few exceptions, that the only interstate business a telephone company does is the toll business. Now, if the rule of reason of which we hear so much in recent court decisions is to be applied why should a company that perhaps, once or twice a year, accepts a message for transmission over half a dozen other connecting companies' lines, and that eventually reaches its destination outside the borders of the state in which it originated, be subject to national control? Would it not be better for all operating companies and comply with all reasonable demands of the public if congress should provide by simple plain enactment that national statutes and the jurisdiction of the Interstate Commerce Commission apply only to toll business and to such companies as do an interstate exchange business, and leave the local exchange the manner of its operation, its duties and its privileges entirely to state regulation?

We are vitally interested in having the law made so clear that we shall know, if we obey the state law, that we shall be in no danger from federal laws, at least as to so much of our business as is not interstate. While we are committed to the control of our business by the state and national government we ought not to be subject to football regulation and kicked from one regulatory body to another.

Doubtless amendments to existing laws are desirable, or new enactments for the guidance of the Interstate Commerce Commission in reference to telephone matters may be best. In any event, the control of the telephone business by the Interstate Commerce Commission is perhaps the most important thing before independent telephone men today.

This is true, I fear, to a greater extent than most of us realize. Of the well known evils that will be corrected and the benefits that we believe we shall receive from the control of telephones by the Interstate Commerce Commission of interstate business, it is unnecessary to speak because they are familiar to us all, but do not so readily see the almost irreparable injury which may come to our business by the rigid administration of regulatory laws along extreme technical lines. The practical working of a law absolutely correct in theory under the direction of an expert, without practical experience frequently produces damage instead of benefit.

We may assume that the present state of public opinion will compel the passing of new laws by congress and, in view of this fact, ordinary business prudence dictates that some one should be charged with the duty of looking after the interests of the independent telephone industry of this country. In this connection it occurs to me, as we are, as a rule, operating the smaller exchanges throughout the nation it is most vital to us if certain measures now before congress shall become laws, as, for instance, in the physical valuation of the properties of common carriers, the law should completely segregate the local exchange from the toll business, making only the latter subject to federal control.

The physical valuation of any exchange wholly within the borders of any state is a matter of state policy and that alone. And in every other respect we should, in so far as our power lies, see that every law is fair to those engaged in the business, as well as the public.

It will not do to assume that, because for many years the independents have fought the battles of the public against monopoly and given the public telephone service at lowest rates, nay, in many cases, at less than cost, the people will now reciprocate.

The attitude of the people is well illustrated by the remarks of a professor in one of the leading universities of the west, who recently demanded that the local telephone company should do certain things for him. When it was explained that the revenues would not justify the expenditure, he replied that it was a matter of total indifference to him whether the company made money or not and, if his demands were not complied with, he would take his business and all he could control, to the competing company. And that fellow is daily making frantic appeals to his classes to awake and see the impending destruction of the republic at the hands of the trusts.

I admit that all law-makers do not share the opinion of the professor, but there is a right smart sprinkling of them in congress and in state legislatures.

A word as to associations of independent telephone men. A careful study of the telephone business for the past two years has convinced me that conditions vary so much in different states and sections of the country that no fixed rule can be laid down and no definite procedure determined upon that can be nation-wide in its application.

In some states district associations do well, although

less so than formerly. In other states, there are flourishing state associations doing a wonderful amount of good. In some states, the surroundings are such that no state association is, or ever can be successfully maintained, at least on strictly independent lines. With these diversified conditions, when we approach the formation of a national association that shall be satisfactory to all, the difficulties are apparently insurmountable.

If we shall not fool ourselves, we must consider actual conditions, and not theories. Many of our best men come from states or sections where physical connection with the Bell, at least for toll purposes, is the rule; others have not, or would not tolerate, any such connection. Many have Bell opposition and more or less fierce competition; some have now, and for years have had, a complete independent local monopoly and are vitally interested in maintaining such monopoly. Again, conditions vary in different sections of the country to the extent that what would be good policy in one part of the country would be utterly abortive in another section.

Can you find greater contrasts than independent telephone owners in Texas in convention assembled annoucing that they will fight the plan of having telephone companies regulated by either railway commission or public utilities commission, because such a move originated with, and is being fostered by, the Bell Telephone Company—I say, where is there greater contrast than this action and the Minnesota Independent Telephone Association fighting tooth and toe-nail for the enactment of a law placing telephone companies under the control of the Railway Commission, because of the immense advantage it will be to independent telephone men?

There are other and just as startling contrasts. Every telephone man with his horizon sufficiently extended to embrace the nation, who will, with honest eyes, look the situation squarely in the face must admit that a national association cannot deal with these special problems peculiar to states or sections.

We are met, then, squarely with the question, Do we need a national association? The most obvious answer to this question is that that is a matter to be settled by those who support it. You can no more maintain a telephone association without funds than you can a business or a church. The militant spirit that fought the devil with fire has gone. We are business men dealing with business conditions and not soldiers using rapid firing guns. You cannot now successfully maintain a lightning bug association, with the light on the wrong end, which can see a good ways behind but nothing in front. It must live in the actualities of the present and not in the memories of the past. Its functions and the scope of its work are largely educational.

So long as it remains an independent telephone association, its location must be at or near the center of the independent telephone industry and, as so large a percentage of both operating and manufacturing interests are located within 500 miles of Chicago, it would seem that the only proper place for the headquarters of such an association is in that city. The expositional feature of an annual convention held in that city alone is worth many times the annual cost of the association to both manufacturers and operators. There is no field of human endeavor in which invention is playing a more important part than in telephony and the coming together of the manufacturer and the operator is of the greatest mutual benefit.

Again, the national association furnishes a forum in which the best thought in the nation in our line is brought forth. If a more practical benefit to members is demanded, the past year has developed an organization composed of the best equipped engineers, traffic and commercial telephone men known to the business, who have developed a plan which will be fully explained during this convention, to bring to every independent telephone company, no matter how small, all benefits which these men can give at a cost so low as to be almost without money and without price. It is the desire of your speaker to see this organization, now known as the Telephone Service Association, incorporated with or made a department of the National association, and we trust that before this convention closes, a committee, with power to act, will be appointed to co-operate with a like committee from the Service association to see if the arrangement I have mentioned cannot be carried out.

We have made a beginning for a reference library and this might be greatly extended for the benefit of us all.

The National association should also take suitable steps to have the independent telephone business of this country placed fully and fairly before congress and all governmental bodies having jurisdiction over telephones. These and doubtless other matters of equal, if not greater importance, to the telephone business could be handled by a National association having the sincere support of telephone men of the country, who are broad enough to admit that the work of such an organization must be along general and comprehensive lines and not in solving local problems.

Nor should we be too insistent that the personnel of such an association should be confined to those whose operations are identical with our own, with perhaps quite different surroundings. We should be honest with each other. If we are, we all know that, almost without exception, the men who in the last ten years have been a force for good to independent telephony in state and national organizations and who have worked for the general uplift, have been connected with companies organized as corporations, and in no case did they own a majority of the stock of the company they were or are connected with.

As men of sense, we know that the moral and legal control is with a majority of the stockholders, who may any moment decide to override our friends and adopt a course opposed to the general good. What are you going to do about it? Most of us are living in glass houses and the fewer stones we throw the longer will we have a roof over our heads.

If our association can furnish an opportunity for all to receive the benefits promised by the Service association and contribute to the educational and enjoyable features of life in matters that are perhaps generally considered theoretical or ideal, but none the less valuable; if we can be moved in all things by that indefinable thing called the spirit of comradeship, which makes the pulse of every man with red blood in his arteries beat just a little faster as he looks into the faces of those engaged in the same work, and makes the handclasp just a little stronger, we shall do well. We are independent of any monopolistic control, but not independent of each other. Co-operation aids efficiency, broadens life and gives pleasure to co-workers in any avocation of life.

Proposed Cut for Chicago and Suburbs

Reductions in telephone rates amount to $421,000 were recommended to Chicago's council committee on gas, oil and electric light recently by E. W. Bemis, the city's public utility expert, who has been at work on the report for several months.

The rate reductions are recommended after allowing all of the difference between that amount and $700,000 to the company for increases in the wages of employes and the establishment of employes' old age, disability, insurance and sick benefits.

In his report Mr. Bemis says that with the knowledge and approval of Mayor Harrison and Chairman Louis Sitts of the committee, he has conferred with President Sunny of the company, and that the changes have been approved by him.

Changes that have been agreed on include the following reductions:

Single party nickel business telephones reduced to 4 cents for all messages over the 20-cents-a-day guaranty.

Two-party business telephones reduce guaranty from 12½ cents to 10 cents. Excess messages at 4 cents.

Two-party nickel residence telephones, with guaranty of 10 cents a day, reduce excess messages to 4 cents.

Messages crossing city limits to be 5 cents each way between Austin and Oak Park, between Rogers Park and Evanston, between Lawndale and Morton Park, between Longwood and Evergreen Park, between Mont Clare and River Grove, and between Mont Clare and Oak Park.

Single line measured service guaranty reduced from $60 to $48.

Single line measured service reduced one-half cent on all messages over 2,400 and under 3,600.

Many changes to measured service from flat rate service are made optional at a saving to the subscriber.

These rates stand:

For 12,520 flat rate business telephones at $125 a year.

For 5,577 flat rate residence single party lines at $72 a year.

For 5,862 flat rate residence two party lines at $56 a year.

For 136,609 four-party nickel guaranteeing $18.25 a year.

The reductions apply to 57,594 telephones. The four-party nickel telephones and flat-rate telephones are not affected.

The installation of meters for measured service is not recommended, on the ground that no satisfactory meter which could be used by any considerable class of service has yet been placed on the market.

Mr. Bemis discusses the nickel-first telephone against which there has been so much opposition, and against which Ald. James B. Bowler has declared "war to the end," but simply recommends that the new subscriber be given his option.

The installation charge of $2.50 which was arbitrarily fixed by the company, and which is assessed against subscribers whose service is discontinued for non-payment before it is restored, has been recommended for reduction to $2. There will probably be aldermanic opposition to this.

Application of the board of education for free telephone service between the schools and to the board offices is denied.

The report calls attention to the probable increases in wages which will be granted to employes. During the last four years it declares that employes working inside the city limits have been given increases aggregating $100,000 a year.

The advance in the pay of 4,948 operators, effective January 16, is equivalent to $195,366 a year.

Of the $135,900 set aside for pension, sick, accident and death benefits to employes it is estimated by Mr. Bemis that $100,000 will apply to employes in Chicago. This fund is controlled by the American Telephone and Telegraph Company.

There will be no reduction in the charge for extension telephones.

The charge for moving telephones, which had been $5, is recommended to be made $1.

California Commission News

Delivering the first decision ever made by a state body on the question of physical connections between telephone companies, the California state railroad commission ordered that a physical connection be established between unrelated companies in the northern part of the state. The Tehama and Glenn county telephone companies are sustained in an appeal to the commission for connections with the Pacific Telephone and Telegraph Company at Red Bluff, which the latter company had refused to grant. The defendant company is given 20 days in which to allow the installation of the joint service, the expenses of the connecton to be borne by the complainants.

"We consider it bordering very much on effrontry for a public utility to urge that it is an economic fallacy to duplicate facilities," says the commissioners in reply to the defense.

The decision was made on the ground that public convenience required that such a connection be made. The rates are to be the same as those now in force, the companies to arrange for a just division among themselves of the rates, tolls and charges. In case they are unable to agree on these points, the commission will fix the division. In commenting on the contention of the defendant company that it should be allowed exclusive control of the territory it serves, the commissioners said:

"No public utility, or other monopoly, so far as that is concerned, can ever justify, nor should it be able to do so, its existence as a monopoly on the theory of an advantage to its patrons, which it does not accord."

The Raymond Telephone Company has applied to the commission for permission to raise its rates between Raymond and the Pines via Coarse Gold and Fresno Flats. The present rate is $1 to $1.50, and the company wants to raise to $1.50 and $2.

Mt. Lassen, 11,000 Feet High, Has Telephone

A lookout station has been established on top of Mt. Lassen, Cal., at a height of 11,000 feet and this season there will be a small house there for rangers. The house has just been completed and is made in sections to be carried up by pack.

Telephone service was completed last season to the mountain top and now a telescope and charts, with other necessary apparatus, will be kept there.

From this point Red Bluff is visible 50 miles away and a fire anywhere within this radius can be easily located.

The Lay of a Layman

By the T. E. Dopester

THE underlying sentiment of the recent convention declared itself before ten o'clock the first day and was maintained until adjournment. It was a brand new sentiment—one you never found before among telephone men and it will grow stronger and endure. At last the operators have found themselves as important men of affairs, engaged in a useful and profitable enterprise.

* * *

Another discovery, while no more predominant at this convention than at others, was the enthusiasm of the manufacturer. He was there like a house afire. He pointed out this little trick and that which enabled him to make a more efficient device. Refinement will never cease to be a factor in telephone apparatus. There wasn't so much quibbling over the prices—a healthy indication, and there was more sensible argument all around. When the operator was asked about his methods, he told the truth, including the price charged for his service. He wasn't bashful about saying his rate was too low when it was. And he volunteered the information that he was endeavoring to correct the weakness. Men grow older in the telephone business as they do in other walks of life and age betokens experience. When properly applied, this is merely wisdom. Those of us who attend telephone conventions realize, partially at least, how the older ones come back year after year. The old wheel horses are always there. No convention will be complete without Fisher and Valentine and Hunter and Hubbell and Woods. Of course, these names are only offered as examples. It would be easy to fill the rest of the page with names of telephone operators who are more apt to miss a meal than they are to miss a convention.

* * *

I don't know what made this meeting enthuse. We all know that there has been a long drawn out era of non-buying. It was exasperating. Manufacturers felt that the change would surely come in the fall, in view of the fact it held tight over the spring, and when it didn't do that, next spring would see it loosen up! The thing kept on like this, year in and out. The manufacturer who didn't go into the tall timber and scare out the game settled down to a protraction of marking time. Some of him abandoned the old methods entirely and started along new lines. The convention just closed found him there with his new system and the operators stood on their toes to see it. The exhibits disclosed some wonderful inventions. I am inclined to the belief that the whole method of telephony is at the threshold of a miraculous evolution. It will be a radical change when it comes, but it promises no disaster to telephone securities. Stockholders of the operators are safe in their holdings, providing the franchise is good, and it is the exception rather than the rule to find a bad franchise among independent operators. And when operators wake up to a realization that modern plants of the highest efficiency may be had without impairing their incomes in any way, they are apt to sweep out the old system to make way for the new. It is this phase of the business that is compelling men to understand their positions as away and beyond their fellows in other walks of life.

It is impossible to foretell how far the inventor and manufacturer will go with their schemes to improve the telephone and extend its usefulness. As an innocent bystander, with very little technical knowledge—I dare not prophecy, but I have been wide-eyed in wonder for twelve years and know of no industry so full of promise for the future and so positively substantial for the present. I have seen men amass fortunes in the business and I will continue to see a happy and contented and ever increasing number come to a full realization of what the telephone means to them and what it means to the public. And as we go along, I see nothing that declares against competition in the business.

* * *

The close relation of the telephone to the people suggests that competition must continue. Monopoly is too easily satisfied. The innovations that have entered so largely into telephone practice can be easily traced to the independent manufacturer. It is remarkable to note that one intensely interesting development of telephone operations, all but ready to be sprung upon an unsuspecting field, was not displayed at the convention. I know that this system will find a warm reception and it will be complete when the announcement comes. Like other equipment now ready for the purchaser, this anticipated system will depend for its success upon what it offers in economy and purpose. It will be constructive, rather than destructive. The displacement of any method of the present will not be harmful to telephone securities. It is this factor that has injected new blood into the exchange operators and renewed hope among the manufacturers.

* * *

Henry Shafer, he of the old International Telephone Manufacturing Company, suddenly came to life at Pittsburgh. Henry went down there to pull the eagle's tail and fire some roman candles. He had the speech in his pocket. But there was too much sky-rocketing by the boys that formed the new independent association and Henry didn't get to perform. I read with considerable disappointment the speech that Henry didn't make. He called it, "What Shall We Do?" What I'd like to know is: "What Shall We Do?" We formed the new progressive independent bull moose thing, but what are we going to do, now that we have it? If Henry Shafer, or anybody else will give TELEPHONE ENGINEER the answer, we promise to spread it around just as far as it can be spread. We haven't been sticking around this business for twelve years without learning how to actually do that.

* * *

Another thing I discovered at the late convention, to my extreme, although temporary regret. There are still remaining a very few of the feeble-minded who regard this magazine as of the deadly type. This ridiculous and untruthful idea has been injected into their domes by unscrupulous agents of our holier-than-thou contemporary which feeds from the dual trough. The extended influence of TELEPHONE ENGINEER has brought with it the full appreciation of the duty its publisher owes to the trade it represents. It should make no

apology for the black sheep that would attempt to belittle honest effort. But it is momentarily disheartening to learn that we have no right to engage in the publishing of TELEPHONE ENGINEER, because somebody else saw the telephone field before we did. For four years we have come face to face with men who regard us as a tool of infamy because we dared to take the middle of the road—eliminate petty politics and stand out for a better telephone business as a whole. We stand by our original declarations in the matter and point with justifiable pride to the record we have made.

* * *

TELEPHONE ENGINEER is read as a dependable, technical authority wherever the telephone engages operators' attention. That means it is a world medium. It has forced its way into the departments of government at home and abroad; into technical schools and libraries; into the hands of men responsible for dispatching trains by telephone; into the various departments of the big operators and into the offices of managers of smaller systems. This circulation reaches the men who are alert —who seek advantage in bettering facilities of transmitting speech. With this condition confronting us, we are inspired by feelings of responsibility to serve our subscribers as best we know how. It is distressing, then, to find an occasional addlepate who would regard our work as part of a pre-arranged scheme to thwart the art—to *damn* it. Why must a great business be tormented by the passions of the ignorant?

* * *

The thing that interests all of us is the persistence of the telephone. It is cheering to know that the Chicago Telephone Company increased the number of its stations in 1912, adding nearly 50,000—that the gross earnings were the largest in its history—that it plans to spend $10,000,000 this year in extending the plant. Bell balance sheets are more frequently available than are the independents, but it doesn't indicate that Bell's business is better. It wasn't a hardship on the entertainment committee to dispose of the banquet tickets this year. All the boys brought enough to take 'em in.

* * *

They are having an awful time to make that old National crowd at Wheeling behave. It won't surprise me to see the National's property come into its own yet. Of course, to do that, it will have to take care of tons of court costs and other like details, but it won't be the first telephone company that has performed the same kind of trick.

* * *

A special resolution has been passed by the Nebraska legislature, which requires newspaper men to register as lobbyists or wear a gag. That might have been all right during the days when D. E. Thompson owned the Lincoln *Star*, but it would seem the present troublesome newspaper men are under suspicion as representing telephone interests. Nebraska is crowding into Ohio's old place as the sensationalist.

Total lengths of submarine cables in Europe in 1912 amounted to 511,417 km. This is equivalent to 40 times the length of the earth's axis, and 12 times the circumference of the equator; 419,900 km. of the cable are in private hands. The French government owns most of the government owned cables, namely 21,043 km. The Eastern Telegraph Company owns most of the private cables, having 104 cables with 79,678 km. length.

A New Condenser Telephone

A new condenser telephone has been made by Ort and Rieger, who use tissue paper saturated with shellac, pasted on tinfoil. It is advisable to make the condensers as large as possible. The condenser of 0.05 M. F. obtained in this way, vibrates like a diaphragm. The insulating resistance was ½ megohm. A further improvement was made by using very delicate rubber membranes instead of the tissue paper, and to stretch this rubber as tight as possible, to fasten down its edges and lay very fine aluminum foil along these edges. The entire device is then stretched on an aluminum drum, using a cap which has two contacts. The insulating resistance at 240 volts was 400 million ohms, the capacity 0.088 Mf. Experience showed that sound was properly transmitted then, if the condenser was connected to a high voltage current of at least 240 volts. The microphone is connected to the primary of a transformer, whose secondary is connected to the condenser telephone over a condenser of 2 Mf. The polarized current source connected to this condenser plays the same role as the permanent magnet in the Bell telephone. Without polarization the voice is one octave higher and speech is very indistinct.

Of importance is the magnitude of the capacity and its independence of the number of periods. In the electromagnetic telephone the self inductance changes with the change in the number of periods, on account of the vibrations of the diaphragm. The result is indistinct speech. The condenser, however, has no vibrations as a unit. Electric oscillations, due to resonance, can be reduced below the harmless number of 6,000 by changing the self inductance in the transformer. Comparison of the two types of telephone gave the same results for both in every respect. The advantage of the condenser telephone lies in the fact that great quantities of energy can be sent through the same without causing a disturbing noise in the diaphragm, and the transmission of sound is much purer than that in the electromagnetic telephone.—*Archiv für Elektrotech.*

Members of Amish Church Install Telephones

The members of the Amish Church of Williamsport, Pa., a sect heretofore noted for adherence to old-fashioned ideas of frugality and of plainness in attire and in homes, have at last yielded to the lure of the telephone. This instrument for conversational purposes is regarded by most people as a luxury, and doubtless was so considered by the members of the Amish Church until one of them dallied with the tempting thing, and then succumbed to it. This one, presumably, told another, and that one still another, until eventually the entire Amish colony near Coshocton, O., got worked up over the matter, each family wanting a telephone of its own.

But the stringent rule of the church, prohibiting luxuries, stood in the way until the happy thought came to somebody that the telephone is a necessity, and not a luxury. Ignoring the truism of the wish being father to the thought, a mass meeting of the Amish people was held, and then and there it was decided, first, that the telephone is a necessity, and second, that the members have the right to install instruments in their homes. And thus it has been demonstrated again that "where there's a will there's a way" to get anything you want.

The Influence of the Telephone

By Samuel G. McMeen*

YOU have all seen, examined and talked to other people about why they did not leave the telephone business, why they stayed in it, and always you got the same answer, more or less crudely expressed, that "we went into it because it was so extraordinarily interesting, and stayed in it for the same reason."

It was all prophesied for us long before, when Bacon said, "First there be three things that make a nation great, fertile, soil, busy workshops and quick and easy means of transportation of men and goods from place to place." And I think that Sir Francis Bacon was not at all wrong in connection with that thought, but the ripening of his mind caused him to say it; and I think that, the alphabet and printing alone excepted, those inventions have done most for civilization which have tended to abridge distance, and in the latter definition he includes all the former, and yet carried it much farther forward. Little had men done to abridge distance other than in transportation at that time. The most that has been done to abridge distance is represented by our own allied arts, by the consummation of the efforts of those people who saw visions and got a whisper of the unknown things and reached out into the unknown and brought that back into concrete form and gave it to us; and so we went on, great and humble, to make our individual contributions to that art.

There was one who might be called a pioneer now, a gentleman by the name of Swanson, who followed his avocation in our art over on the other side of the river, and he became a very great expert in it, and showing what the power of the human mind in the way of interest will do, his great expertness lay in his ability to superintend a small shed in Menlo Park, in which shed was located a considerable battery of kerosene lamps, of which the wicks were turned quite high, so that they smoked profusely on the inside of the chimney, collecting that wonderful substance which, when pressed into cakes, became the buttons of Edison's carbon transmitter. These lamps in time became heated and, with more or less regularity, some one of them would catch fire, and Swanson carried the record for a considerable time of being able to locate the flaming lamp and cast it forth in less time than anybody else who had charge of that shop.

So, from him on, there have been interested ones who have made their contributions to an art which is so complex that it is a problem to condense the names of telephone subscribers into a directory small enough to be usable, and yet there are people who try to memorize the contents of those great volumes. We had a lady who was in the habit of depending on her memory, and she wanted to go to a formal function, and, after calling the number by memory, she said, "Doctor, I know I have been ill, but I am considerably better, and I want to go to a function tonight and wear a low-cut gown," and the answer came, "Madame, we don't care what you wear; this is the Lake Shore freight yards."

I only cite that, and the next one, as mere examples. I would not for worlds be frivolous upon this subject, but the next instance shows that new burdens are brought upon mankind by an increase in the conveniences of life, and I sometimes seriously question whether the contribution we have made, to which we were attracted as a scientific thing, not a social thing, the marvel or the toy which all the world admitted it was at the outset, we didn't see far enough forward to see what a profound influence this was going to have upon humanity.

The influence has been profound, however, whether for good or not, and it has speeded up everything. They used to say pretty generally, "while there is life there is hope," but in Chicago they have revised it and say "while there is life there is haste, and what is between us is in the way." The next one indicates how the multiplication of a good thing may be harmful, and I submit it for your serious consideration.

I had the fortune to join forces with Dr. Kempster B. Miller, who is an author on this subject and a somewhat serious-minded person, and there we found ourselves early in that work in need of a third person's assistance in the way of a small boy who would do various things, and we advertised, and among the responses was one which attracted us, the mental picture, as we read it, being a small boy with red hair. It read like this: "Gentlemen, I am an orphan and need the money, and it beats the devil how hard times is." So we wrote him, and he came and turned out to be just what we thought, and we instructed him carefully and seriously.

There were two telephones in the office at that time, both upon the wall, leading through different systems to a larger or smaller group of possible correspondents. To him we said, "When anyone calls, there are two things to be investigated and reported: First, who is wanted; and second, upon which telephone shall the person respond?" as there was a journey to make and one of them to answer upon.

So the boy put that down on a tablet of his memory, and presently came to Mr. Miller, saying, "A lady wants you on the telephone." Seeing his instructions forgotten so soon, Mr. Miller turned and said to the boy with some show of resentment, "Which one?" To which the boy responded, "I don't know, sir, but I think it's your wife."

And that is what makes me think that, perhaps, as we look long into the future and the expansion of these things with the inspiration we all feel carrying us forward, we may get a social condition which, when all the people of all the earth may be reached there may be some complications and difficulties. And yet we, whose technological zeal was attracted by this marvel, as we look about in the faces of our acquaintances, see very many who came to this art not because it was of such great social benefit. We are all perfectly willing to benefit others and ourselves along with it, but the art was not born for the purpose, as far as we were concerned, of the social benefit it conferred on humanity, but rather because it was useful to others and interesting to ourselves. But that led to the point of social usefulness, as latterly we are beginning to see, and I never felt how great a thing it was that was done until having gone to Boston with more or less hopefulness to that meeting from which most of us expected relatively little when we went on—we were going to fraternize and meet each other. And yet no man or woman went away

*Address before the Telephone Pioneers of America.

from that marvelous meeting a year ago without a feeling of inspiration that a great number of good people were doing the same sort of thing and thinking the same thoughts.

And yet, as we look back on our performances, we must not forget what is to be done; I feel that there are more marvelous things to be performed in the future than have been done since the first great thing was done, and we can talk hope and see hope; there is no us thinking that the great things have all been done, and when we look back on what has been done we can be modest in the face of the things to come.

Ohio Commission News

Trouble, which the public service commission will settle, has developed between two telephone companies in Seneca County. Charles C. Bronson, secretary of the Farmers' Telephone Company of Bloomville, filed a complaint against the Seneca County Mutual Telephone Company with the commission, in which the latter concern is charged with violating rules and regulations of the commission by establishing rates and furnishing long-distance service.

The commission is asked to restrain the company from building a competing line and to fix its rates for service.

The city council of Cleveland has received notice from the state public service commission that the telephone companies have discontinued 10-cent public pay stations. This rate was charged for service at hotels in the downtown section.

The complaint which Dr. A. H. Dunham of Dayton filed against the Central Union Telephone Company in behalf of himself and other Dayton physicians was passed on by the public service commission in a decision that in future might apply to other cities where similar cases are likely to develop.

Dr. Dunham, as well as other physicians, according to their representations, had telephones in their offices and residences, both of which would ring through a single operation at the central exchange and for which service they paid the company $66 a year prior to October 25, 1911. It was charged the rate was raised to $96, but that the increased rate did not apply to others who received the same service.

The company was ordered to establish a reasonable rate for such service and to make it available to all persons. Telephone companies, under the order, cannot furnish the double system to subscribers as a special favor, it is believed.

Commission Criticised. Investigation Ordered

The action of the Nebraska house of representatives in ordering an investigation into the conduct of the state railroad commission in connection with its grant of permission for telephone mergers is likely to be challenged as an invasion of one department of government by another. The legislature and the commission, as well as the supreme court and the various executive offices, are all creations of the constitution. There are three departments, the legislative, the judicial and the executive, and the railroad commission has part of the functions of an executive and part of those of a judge.

Members of the commission say that they have no objections to making a full disclosure to any person or body of their acts in connection with the permission to merge or of their granting certain issues of stocks and bonds by other corporations, but they do not believe that the house was either courteous or fair in adopting the resolution of Mr. Scott, in the form in which it was presented. As that resolution was drawn it assumed as true that the commission had acted without statutory authority and had not safeguarded the interests of the public, which is a conclusion, the commissioners think, should have been withheld at least until the investigation had been made.

The supreme court is cited as authority for the statement that the reflection is unwarranted.

Washington Commission News

Judge Mitchell in the superior court of Thurston county affirmed the order of the Washington Public Service Commission requiring the telephone lines of the Pacific Telephone and Telegraph Company to be physically connected with the lines of the Sunnyside Telephone Company, at Sunnyside, so that conversations can be transmitted from points on one line to points on the other without transferring or being repeated and without double charges.

This is the first case of the kind that has ever arisen in the state, and if the judgment of the superior court is affirmed by the supreme court it fixes the obligation on telephone companies to maintain through routes and joint rates to the same extent that the duty rests on railroads.

That the Spokane directory is full of errors, the installation of telephones there proceeds slowly and the service is slow and inadequate and costs too much is alleged in a complaint filed by Mayor Hindley of Spokane with the public service commission supplementing a complaint already filed by the city of Spokane against the Pacific Telephone & Telegraph Company.

Sale of National Telephone Directed

The decree of sale in the foreclosure suit of the Commonwealth Trust Company of Pittsburgh against the National Telephone Corporation, which Judge Dayton recently indicated in a memorandum opinion that he would hand down, was sent to Deputy Clerk George E. Boyd to be entered.

The decree directs the sale of the property of the defendant corporation, in the federal court room at Wheeling, W. Va., to the highest bidder, after it has first been advertised in newspapers in this and other designated cities, and appoints the receivers, James W. Ewing and A. C. Scherr, and Attorney T. S. Riley as commissioners to conduct the sale, subject to approval by the court.

Exceptions and objections to the decree on the part of Andrew J. Howard, Lloyd Beeghly and the Continental Telephone and Telegraph Company are noted, and they are given the right of appeal.

Maggie Mae Callihan, age 6 years, is the youngest telephone operator known to the world. She began active service in her mother's office at the tender age of 5 years and 5 months, when her baby fingers were scarcely strong enough to manipulate the keys of the switchboard. She is the daughter of Mr. and Mrs. W. B. Callihan of Thomaston, Texas, and that town challenges the state and the whole United States to produce a younger telephone operator.

European Telephone Development

By Fred W. Scholz

THE NEW TELEPHONE EXCHANGE IN MAINZ.

LAST year the city of Mainz operated its telephones from the new telephone exchange, using the common battery system built by the Mix & Genet Company in Berlin. In this system the subscribers' lines are passed directly to the calling jacks from the distributing frame. The multiple panel is connected at the distributing frame, and the subscriber can call up the exchange even if there should be interruptions in the multiple jacks and cables. In the relay room arrangement were made to have the calling and cut-off relays placed between the main and the intermediate distributing frames, passes across the calling relay *AR*, then over the armature of the cut-off relays *TR*, the *b*-line, the *a*-line, the armature of the cut-off relay to earth. With the resulting attraction of the calling relay armature, a circuit is closed across the call lamp *AL*, the controlling relay *CR* and the grounded common battery. The armature of the controlling relay acts by means of the grounded battery on the pilot lamp *CL* and the night call lamp in the long distance switchboard.

Operator answers call: Calling plug *AS* is placed in calling jack *Ka*. Current passes from the grounded battery over a resistance of 85 ohms, the pilot lamp *ULa*

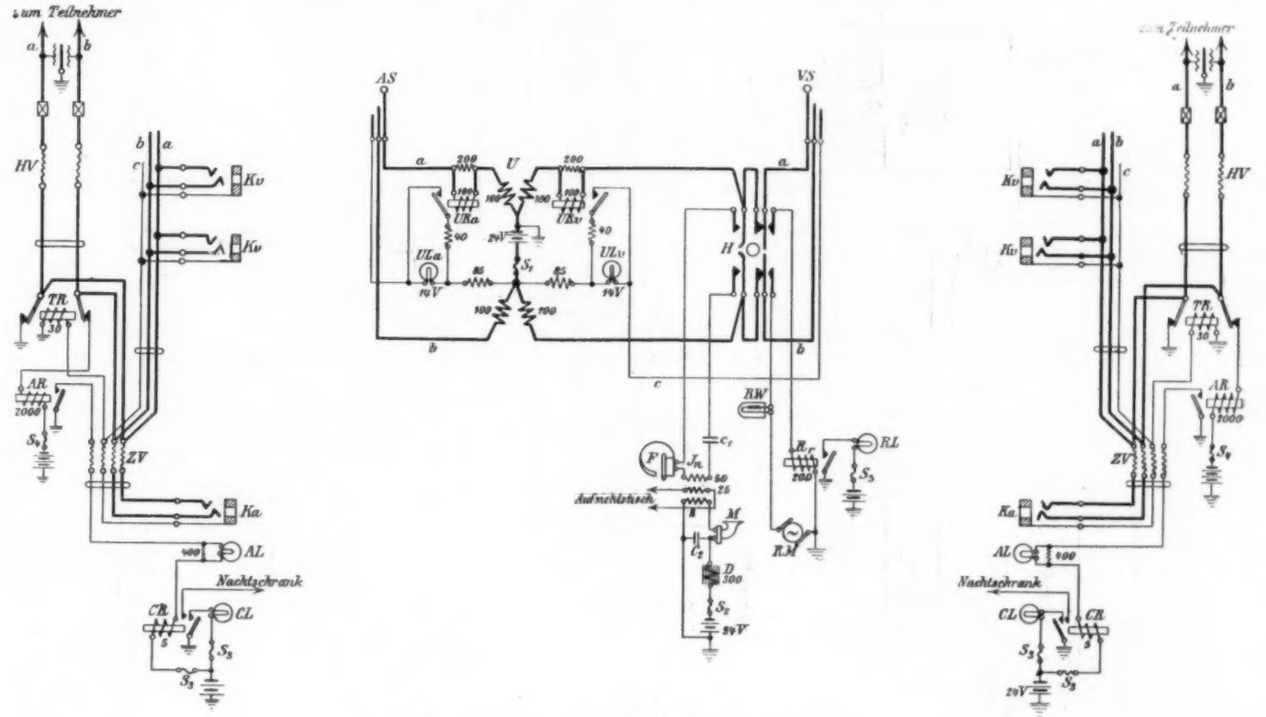


Fig. 1. Multiple Switchboard of Mainz Exchange.

thus saving considerable space and permitting easy supervision. This exchange has about 6,300 subscribers for local service only. The long distance switchboard, working with two operators, does not use double interrupter jacks, but uses the ordinary parallel jacks. Disconnecting local connections in favor of long distance calls is done from the long distance switchboard and appears at the local switchboard as a flickering of the pilot lamps. The trunk line board has four operators and is arranged in such a way that every call from the local boards appears at all four operators' positions at the same time. The exchange is connected by an automatic system to different fire stations and there are more than 114 fire alarm instruments distributed throughout the exchange which would give the alarm automatically in case fire broke out anywhere in the exchange.

Calling of exchange by a subscriber: When the subscriber lifts the receiver from the hook, the current which is reached by way of a 40 ohm resistance and the armature of the supervisory relay *URa*, over the *c*-wire of the cord, the plug *AS*, the jack *Ka*, the cut-off relay *TR* and then to earth. The cut-off relay cuts off the *b*-line from calling relay and battery as also the *a*-line from earth. As a result the calling lamp and the pilot lamp go out. The subscriber receives current from the negative pole of the battery, over the repeating relay winding of 100 ohms, the *b*-wire of the cord, the plug *AS*, the subscriber's telephone, the *a*-line, the jack *Ka*, the point of the plug *AS*, the supervisory relay *URa*, the repeating coil of 100 ohms and the positive pole of the battery. Relay *URa* is acted upon and the lamp bridged, for which reason it does not light. The induction coil of the calling apparatus has a third coil of 25 ohms which leads to the control board and allows the listening position for supervising.

Testing for busy wire: After receiving call, the

operator plugs the required jack in the usual manner and tests for busy wire. If the line is busy, the current passes from the jack over the point of the plug *VS*, the key *H*, the supervisory relay *URv*, the repeating coil of 100 ohms to earth. A clicking noise is then heard in the telephone *F* of the operator.

Making connections: If the line is open, the plug *VS* is placed in the corresponding jack on the multiple panel. The pilot lamp will glow, the current path being as follows: Battery, resistance of 85 ohms, lamp *ULv*, *c*-wire of cord, plug, jack, cut-off relay of desired line and earth.

Calling subscriber: The calling key is laid over towards the board panel, and the call current generator *RM* sends current through the resistance lamp *RW*, the

The above diagram referred to local connections only, and the following description will give an idea of the long distance calls which are received and answered in this exchange. Figs. 2 and 3 give the wiring diagrams to which the symbols refer.

The call current coming from a long distance line passes from the *a*-line over the armature of the cut-off relay *FTR*, through the coils of the call relay *FAR* and over a second armature of the relay *FTR* into the *b*-line. The armature of the relay *FAR* is attracted during the entire call, and uses the following current path: Call supervisory relay *SKR*, call lamp *FAl*, night operator key *Nt*, the third armature of relay *FTR*, the holding coil of relay *FHR* and earth. The attracted armature of relay *FHR* makes a grounded circuit for the same cur-

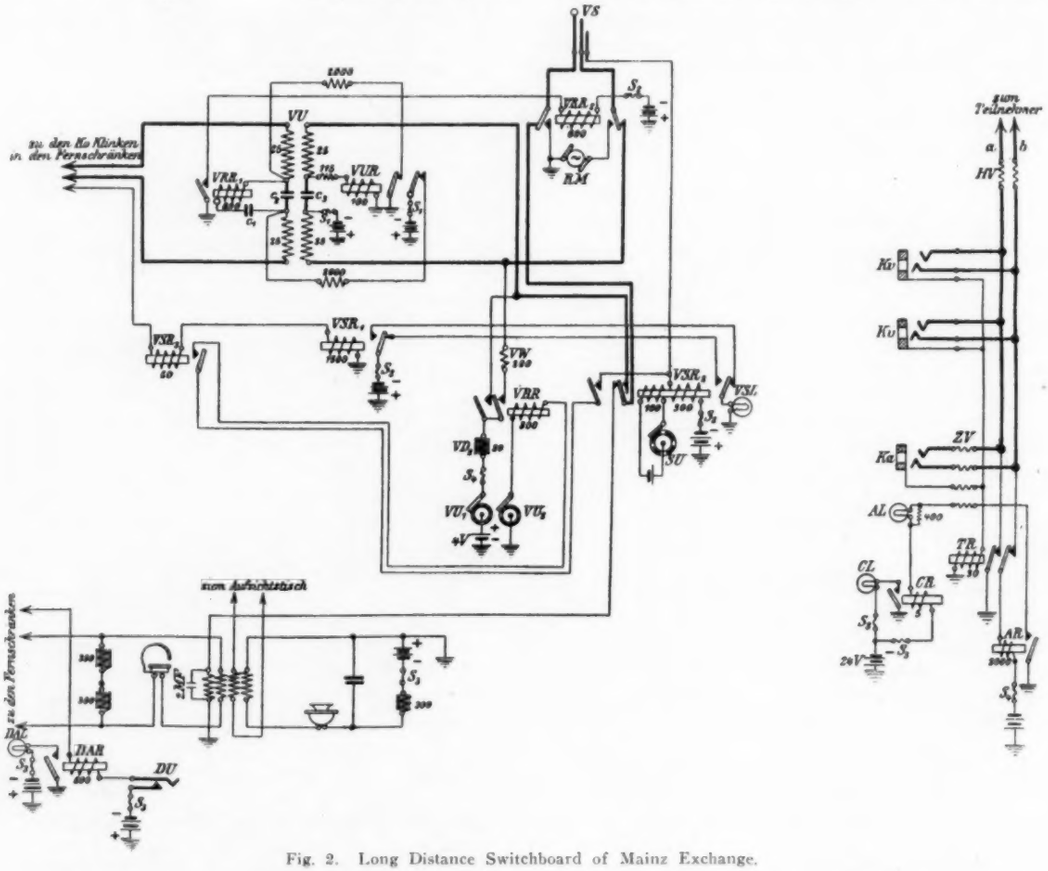


Fig. 2. Long Distance Switchboard of Mainz Exchange.

throw-over switch *H*, *b*-strand of the cord, plug, *b*-wire, subscriber's condenser, calling bell, *a*-line, plug point, calling relay *Rr* of 200 ohms, which latter makes the calling lamp *RL* glow.

Supervising call: If the called subscriber lifts his receiver, the current circuit is the following: Repeating coil of 100 ohms, switch *H*, *b*-strand of cord, plug, jack *Kv*, *b*-line, induction coil, hook switch, subscriber microphone, *a*-line, point of plug *BS*, switch *H*, acting upon the supervisory relay *URv*. The lamp *ULv* is short-circuited and is extinguished. When both subscribers hang up their receivers, which shows through glowing of the corresponding lamps *ULv* and *ULa*, the connection is broken. The cut-off relays are without current, the control lamps *ULv* and *ULa* go out and both lines are ready for a new call. All the above symbols relate to Fig. 1.

rent circuit which will remain, after the armature of relay *FAR* has been repelled after making the call. The call lamp and pilot lamp *SKl* light up independently of the length of the call. If the calling plug is placed into the calling jack *Ka*, the current of the grounded common battery flows over the auxiliary relay HR_1 into the *c*-strand of the cord, the plug neck, the cut-off relay to earth. The three armatures of the latter are attracted, cut and the calling relay *FAR* and interrupt the circuit of call lamp *FAl*. This and the pilot lamp *SKl* go out. If the operator now throws over the black calling key belonging to the proper pair of cords (*AFS*), the call is answered. After the long distance operator at the other end of the line has given the proper number, it is cut out of the line by using the cut-off key *T* and the operator can make the connection with the local subscriber who is wanted on the long distance wire. The

operator now presses down one of the trunk line keys *DT* and comunicates with an operator on the local board. The current flows over the key *DU*, the call relay *DAR*, to a grounded spring of the operator key. The relay *DAR* makes the call lamp *DAL* glow. After the distance operator has given the number to the local operator, the latter tests the desired line and then gives the proper number of the jack into which the distance operator is to place the plug. At the same time the local operator plugs the multiple jack of the desired subscrib-

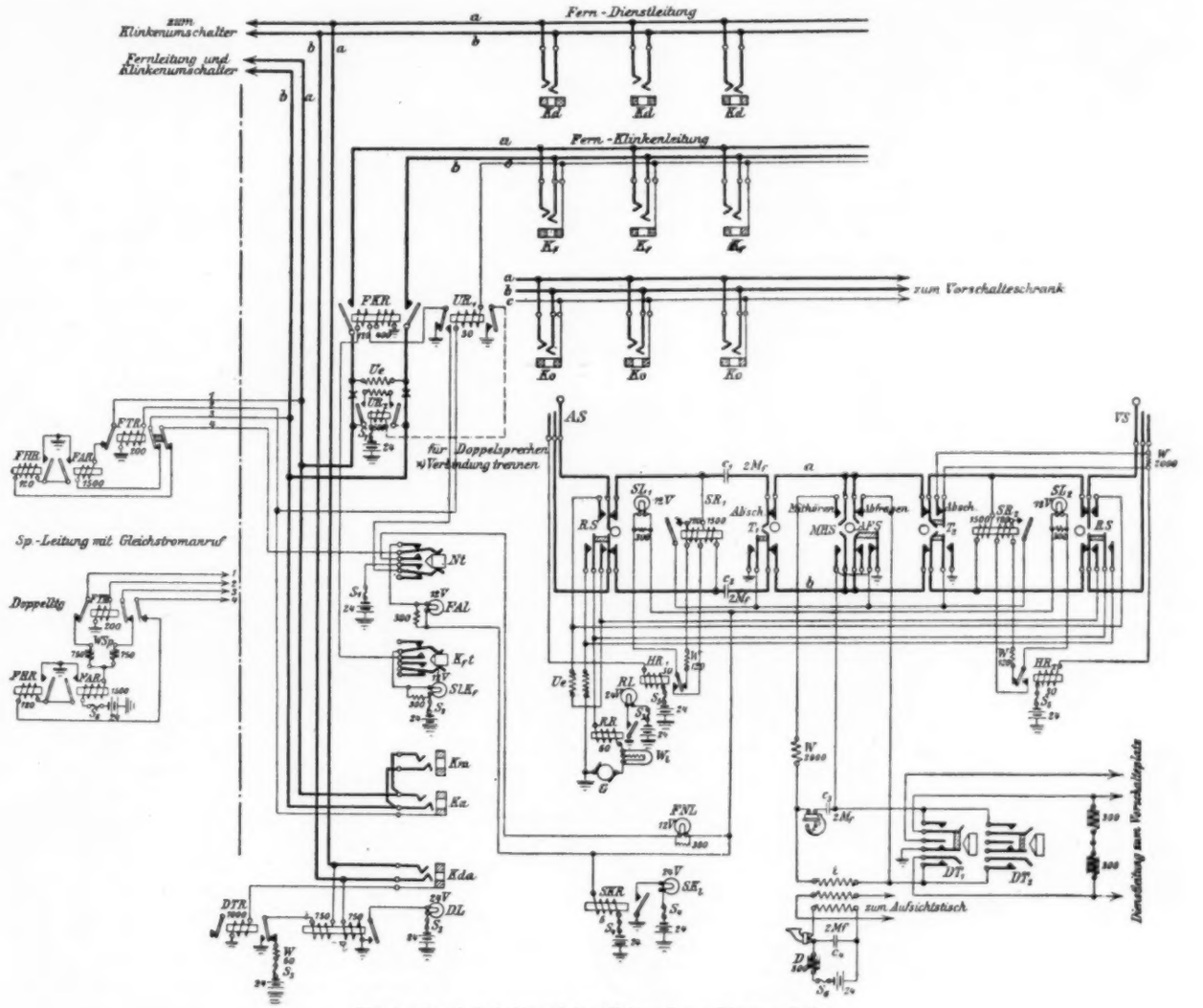


Fig. 3. Local Switchboard for Making Long Distance Calls.

er's line. Current flows now through the coils of the relay VSR_2, then c-strand of the cord, the neck of plug *VS*, the neck of the plugged multiple jack, the cut-off relay of the desired line to earth. The call lamp *VSL* receives current by way of the attracted armature of relay VSR_2 and also through the armature of relay VSR_1, which is connected to the battery. If now the long distance operator plugs the jack requested by the local operator (*Ko*), current flows from the battery through the relay HR_2, the *c*-strand of the cord, the neck of plug *VS*, the jack *Ko*, the *c*-wire of the local line, the relay VSR_2, and the relay VSR_1 to earth. The armature of the last named relay is attracted, interrupts the circuit of lamp *VSL*, the latter goes out and in this way informs the local operator that the long distance connection has been made. When plugging jack *Ko*, current flows from the battery over the armature of relay *VUR*, the resistance of 2,000 ohms, one coil of the repeating coil *VU*, the *b*-wire of the local trunk line, the plug *VS* at the long distance board, the 1,500 ohm coil of relay SR_2 the point of plug *VS*, the *a*-wire of the local line, one coil of the repeating coil *VU*, the resistance of 2,000 ohms to the grounded second armature of relay *VUR*. At the distance board the armature of relay SR_2 is attracted, current flows across the calling control relay *SKR*, the lamps SL_2, armature of relay HR_2, which is not attracted, as the current is not strong enough. Lamps SL_2 and SK_1 glow. When calling the desired subscriber, the current flows across call current repeating coil *Ue*, through the relay VRR_1. If the subscriber removes his reeciver, the current flows from the grounded battery over one coil of the repeating coil *VU*, one armature of relay VRR_2, the *b*-wire of the subscriber line, the telephone instrument, the *a*-strand of the subscriber line, the second armature of relay VRR_2, one attracted armature of relay VSR_2, one coil of repeating coil *VU*,

supervisory relay *VUR* to earth. Both armatures of the last named relay are attracted and interrupt the current in the *a*- and *c*-strand of wire leading to jack *Ko*, so that the armature of the relay SR_2 is repulsed and the lamps SL_2 and SK_1 go out. When the call is finished, the relay *VUR* is without current, since both subscribers have hung up their receivers. The armatures of the latter are repulsed, and current flows again over relay SR_2 to the long distance board. Lamps SL_2, SK_1 and SL_1 glow again as they did before the subscribers removed their receivers. The current of the grounded battery flows over relay *SKR*, lamp SL_1, armature relay HR_1 which is attracted as long as plug *VS* is in jack *Ko*, over the 120 ohm coil, the relay SR_1, the armature of this relay, and the grounded calling key. After testing whether the call is finished the lines are disconnected and lamps SL_1 and SL_2 are extinguished. When plug *VS* is taken out of jack *Ko*, the armature of the relay VSR_1 is not attracted any more, so that a current path is established by way of the attracted armature of relay VSR_2 for lamp *VSL*. The latter glows, and shows the local operator that the call is finished and the plug to be taken out of the multiple jack. The lamp will then go out, since the armature of relay VSR_2 is repulsed and the current circuit is interrupted. The above description gives a brief summary of the working of local and long distance calls in the above exchange and as these are the most frequent calls and connections made in the Main exchange, they have been selected to illustrate the system used there.—*Elektrotech. Zeit.*

THE TELEPHONE OPERATOR IN BUSINESS.

The *Zeitschrift für Schwachstromtechnik* brings a timely discussion on the matter of telephone service in business. Most business houses pay much attention to their efficiency and courtesy to customers, yet neglect one essential in that they do not take sufficient care of the telephone service. It is a fact that in most offices the p. b. x. telephone operator's position is the lowest on the list and that usually a new man or in many cases, a boy is used as operator. There are, of course, many objections to this practice. In the first place the new office boy knows usually next to nothing about the details of the business in which he is employed, and he is therefore unable in nine cases out of ten to give the right information to inquirers over the telephone. The progress of such a conversation is somewhat on this style: The inquirer puts his question, and the operator after asking the speaker to repeat the question will call another clerk who will make him repeat the question again and perhaps switch the call over to a third party where the question must be again repeated. It is no wonder that most men lose their patience, since there is comparatively little time to waste in telephone conversations in most cases. The inquirer may get his information, and he may not get it, depending on the circumstances. Here, then, is one evil of placing telephone operation in the hands of an inexperienced, under-paid clerk.

Now take a second drawback, which is even more serious than the first. This is lack of courtesy. It is an old story that the p. b. x. telephone attendant is not always a model of politeness, and often the tone in which the answer is made will be anything but courteous. The voice can carry a good deal of meaning to anyone who uses the telephone a great deal and many a customer has been lost through lack of politeness in this respect. Instead of answering in a courteous manner very often we get answers that indicate resentment at the interruption to the attendant's repose. Patience is also a virtue not possessed by many of the attendants and if the speaker on the other side of the wire is not able to give detailed information to satisfy the operator, courtesy is thrown to the winds and the answers become gruff and discourteous. Now many business houses will say that this cannot be helped. This is wrong, however. It is a fact that many places have made a forward step by employing girls for operators, who are more patient than boys and usually more polite under even very trying circumstances. But even where girls are not used, much can be done by the attitude taken by the manager in this regard. If the attendant understands that it is the policy and desire of the house for which he works to be polite to those who are telephoning, and if this fact is impressed upon him at frequent intervals, matters will become better. In addition, the operator should be a young man who has been in the business for some time and knows something about it. He need not be an expert, of course, but he must know the different departments, their work and their scope, so that he can connect the inquirer to the right party without further delay, or else answer certain questions himself without causing too much delay to the inquirer. If such methods are taken in this matter of telephone service in business houses and factories, much can be done to make telephone service easier and more efficient and pleasant for all parties concerned.

INNOVATIONS IN FRENCH TELEPHONE SERVICE.

The French government intends to introduce the McBerty system of semi-automatic telephony in the cities of Marseille and Angers. It has been figured that this system can save about 60 francs per subscriber if used in Paris, which for 100,000 subscribers in that city would be about six million francs, or $1,200,000. France did not wish to introduce this system until it had been tried out somewhere else, and for that reason the trials in Antwerp were watched by French officials. The tests at that city were satisfactory and so the French government came to an agreement with the inventor, agreeing to pay for the equipment after it had been in satisfactory operation for about six months. In Angers the exchange has about 1,400 subscribers, with sufficient space for 3,000 lines. In Marseilles there are at present 7,500 subscribers, and the equipment is figured for a maximum of 20,000 lines. This system is to be finished by July, 1913 and to be in full operating condition by January of next year. The advantage of the McBerty system is said to lie in the possibility of changing to full automatic system when desired. If the tests are satisfactory, the automatic or the semi-automatic system is to be introduced in all the larger cities in France. As the government does not believe in monopoly, it has specified that any French telephone apparatus manufacturing company should have the right to build this type of apparatus, if it is successful and comes up to expectations. The government is making tests with other systems and is trying out the Strowger system in Nizza and in Orleans.—*Zeit. f. Post u. Telegr.*

The federal government has accepted tenders for the installation of automatic telephone exchanges on the Strowger system in the Glebe, Newtown and Balmain suburban areas of Melbourne, Australia. The contract price is about £37,000. The system has already been installed at Geelong, at a cost of £14,293.

The New York, Westchester & Boston

By M. H. Loughridge*

THE New York, Westchester and Boston Railway, which was recently put in operation, is somewhat unique, in that it is the first strictly suburban railroad built from the ground up according to the most modern methods and with all the latest approved appliances for high speed and dense traffic.

Columbus Avenue Interlockings and Tower.

The completed line includes a four-track section 6.8 miles long connecting with the four main tracks of the Harlem River branch of the New Haven system, near 174th street, New York City, and extending in a northerly direction to Mount Vernon. There it separates into double track lines, one extending eastward approximately 2.1 miles to New Rochelle, where it connects again into the New Haven system, and the other continuing northward for 9.4 miles to White Plains. The main line touches the eastern extremity of Bronx Park, thence follows a line midway between the Harlem division of the New York Central and the Harlem River branch of the New Haven to Mount Vernon. From Mount Vernon to White Plains the line is almost parallel with the New York Central, and is separated from it about 1.5 miles. It thus taps a country that was practically barren of transportation facilities.

In this territory there are 45 steel railroad bridges, 22 steel street bridges and four concrete arches, which eliminate all grade crossings. There are also three steel viaducts. The bridges comprise 11 per cent of the road bed. In the Pelham Parkway section the line passes through a sub-surface four-track tunnel, 4,000 feet long.

The line is built through a rolling country with scarcely any part of it on the natural grade. The cuts comprise seven miles, mostly through solid rock and of an average depth of 16 feet. The fills amount to 9.1 miles of an average depth of 14 feet and are composed of rock in very large pieces.

This railway represents, in its roadbed, stations, equipment and motive power, the highest standard of railroad construction known to date. There are no grades exceeding one per cent except approaching the New Haven connections and the White Plains terminal. Curves do not exceed four-degree except approaching express stations where the speed is reduced. The entire right-of-way is protected by a substantial iron fence. The buildings are of steel and terra cotta with a stucco finish and fitted with iron window sash, attractive in appearance and fire-proof.

The stations on the four-track section and on the New Rochelle extension are approximately one-

*Signal Engineer.

Department of Railway Telephones

This department is established as a permanent feature of TELEPHONE ENGINEER. The progress of the art of telephone train dispatching, its technical development, its news, and the elucidation of its mysteries for the non-technical worker will be found each month in these pages. The editors invite the problems and solicit the co-operation of the many readers of TELEPHONE ENGINEER in all parts of the world whose interests lie along these lines.

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View of a Tower Interior.

half mile apart and on the White Plains branch they average one mile apart. The express stations, of which there are seven, are approximately two and one-half miles apart. The running time of express trains between 180th street and Mount Vernon is nine minutes, New Rochelle is 13 minutes and White Plains is 24½ minutes; the average speed being 37 miles per hour, allowing 25 seconds for each stop. The running time of local trains to New Rochelle is 24½ minutes and to White Plains 39 minutes; allowing 15 seconds for each stop. This gives an average speed of 21.6 miles per hour.

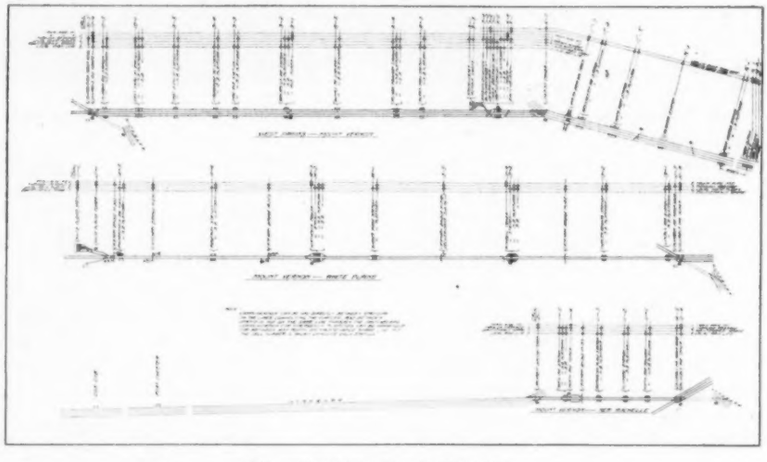
The franchise requires that 60 trains be run on the main line in each direction daily, and it requires also that trains be operated by power other than steam locomotive.

The block signaling was worked out on principles that are well understood in signaling; that is, that when approaching a stop signal the motorman traveling at maximum speed shall have an advance indication in proper time to stop his train before reaching this signal.

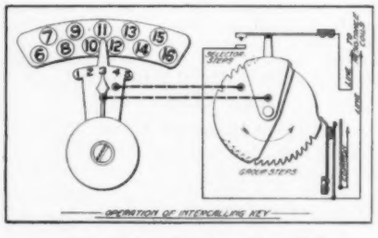
The interlocking comprises seven plants in addition to two for the New Haven connections and consists of four 17-lever machines, two 29-lever machines, and one 35-lever machine. Power interlocking machines are used throughout. The interlocking plants are installed with the safeguards usual for high speed and dense traffic. Approach locking insures the integrity of the route to a train that has received a clear signal, the arrangement being such that it cannot be changed for an interval of one and one-half minutes. An emergency release, however, is provided in the junction and terminal towers, enabling the leverman on breaking a seal instantly to release the approach locking and change the route in cases of emergency—the breaking of the seal requiring an explanation as to the cause. Route-locking secures the route in front of the train when it is within the limits of the interlocking after the signal lever has been restored to normal. The locking of the switches, however, releases as soon as the train has passed over them. Separate indications are provided for the approach of trains in each of the two blocks in the rear of the first home signal, so as to give separate indications for trains following each other one block apart. These indications consist of lights in a model of the tracks placed over the interlocking machine and a buzzer calling attention to the lights. Light indicators are also provided to show when the signals may be cleared and when the detector switch locks are released.

It was considered that at the small interlocking plants, it may not be necessary to have a leverman constantly in attendance, there being long intervals in which switching would be unnecessary. To make this possible the signals for the direct movements operate automatically the same as block signals when the lever controlling them is kept reversed. Thus through trains may pass these interlockings without attention on the part of the operator.

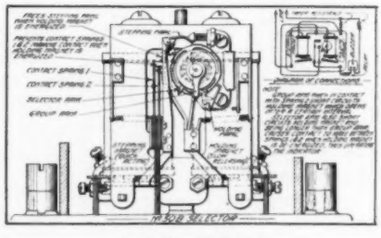
The New York, Westchester & Boston connects with the New Haven system at two points, and some of the schedule trains will be operated through from Harlem River on the New Haven road. As a consequence the same system of electrification is used on both roads; that is, 11,000 volts, 25 cycles, single-phase for the propulsion of trains. The propulsion current is distributed from an overhead wire and collected by a pantagraph on top of the cars. This overhead wire



Plan of Telephone Distribution.



Operation of Intercalling Key.



Details of Selector.

is supported by a catenary construction, which in turn is supported by catenary bridges spaced approximately 300 feet apart. The feeder wires and the signal mains are carried on cross arms placed on extensions of these bridge legs. What is known as the double catenary construction is used except on the New Rochelle extension.

For the same reason that the electrification is similar, the type of signal is also similar to that used on the New Haven road—that is, two-position signals with center-pivoted blades, having a 60-degree movement from the horizontal. Most of the signals are suspended from catenary bridges, and are arranged so that the top blade comes in a horizontal plane below the main catenary structure, afforded an unobstructed view from trains. And the center pivoted blades afford the greatest possible clearance from the high tension wires.

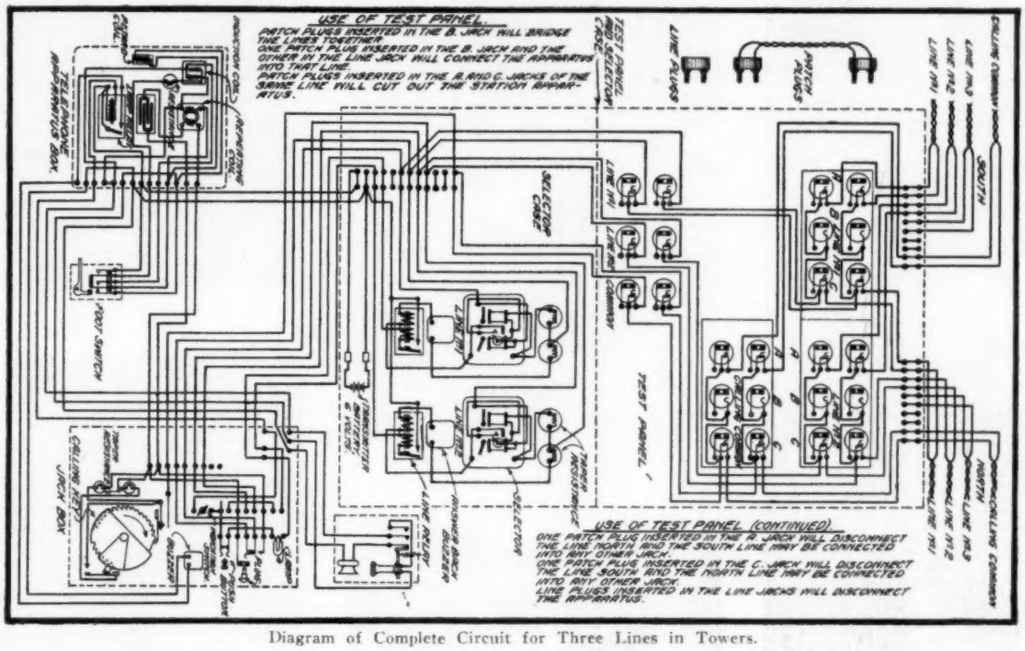

USE OF TEST PANEL
PATCH PLUGS INSERTED IN THE B JACK WILL BRIDGE THE LINES TOGETHER
ONE PATCH PLUG INSERTED IN THE B JACK AND THE OTHER IN THE LINE JACK WILL CONNECT THE APPARATUS INTO THAT LINE
PATCH PLUGS INSERTED IN THE B AND C JACKS OF THE SAME LINE WILL CUT OUT THE STATION APPARATUS.
USE OF TEST PANEL (CONTINUED)
ONE PATCH PLUG INSERTED IN THE A JACK WILL DISCONNECT THE LINE NORTH AND THE SOUTH LINE MAY BE CONNECTED INTO ANY OTHER JACK
ONE PATCH PLUG INSERTED IN THE C JACK WILL DISCONNECT THE LINE SOUTH AND THE NORTH LINE MAY BE CONNECTED INTO ANY OTHER JACK.
LINE PLUGS INSERTED IN THE LINE JACKS WILL DISCONNECT THE APPARATUS.
TEST PANEL
TEST PLUGS
PATCH PLUGS
LINE RELAY
SELECTOR
INDUCTORIUM
CALLING DEVICE
HOOK SWITCH
NORTH
SOUTH

Diagram of Complete Circuit for Three Lines in Towers.

Somewhat of a departure from the usual arrangements in signal circuits has been adopted in several instances, chiefly with the object of simplification, to avoid the use of special apparatus, and on account of the conditions to be met.

No wires are used that are common to more than one source of energy, contrary to the customary practice in signal work. The principal reason for requiring this condition was to lessen the effect of the inductive influences from the propulsion current by limiting the length of any wire to the length of two blocks.

The propulsion current for operating trains on the New York, Westchester & Boston is obtained from the New Haven system, the power house of which is located at Cos Cob, Conn. The power generators consist of three-phase units in which one phase is connected to the trolley system, another is grounded to the rails, and the third or power phase is used for controlling and regulation. These generators furnish current at 11,000 volts, 25 cycles, in each of the phases, which are 120 degrees apart. Trains operate on single phase between the trolley and the track, the operating current being stepped down to 250 volts by a transformer underneath the car.

The power for the signal system is obtained from the same source as that used for the propulsion of the trains. There is, however, one element that is common to the propulsion current and to the signaling current, viz.: the tracks. As stated, the track forms one side of the propulsion circuit but the track circuit is also a fundamental part of the block system, with the difference, however, that the propulsion current flows in both rails in the same direction, whereas the signaling current flows in each rail in opposite directions. This is secured by means of an impedance bond placed at the end of each block, forming a path for the propulsion current and impeding the flow of the signaling current so that the latter is confined to the limits of the block joints.

In order to differentiate between the signaling current and the propulsion current it is necessary to obtain current of different characteristics, and to design track relays responsive only to the characteristic of the signaling current. This is secured by using a frequency relay and operating the signal system at a frequency of 60 cycles per second, to which frequency this relay is responsive. Since it is necessary to have current of 60 cycles frequency to operate the track circuits the entire signal system is operated at 60 cycles, using the same transmission lines. To obtain this difference in frequency from the 25-cycle propulsion current it is reconverted by the use of frequency changers or converters.

The means of communication on a suburban railroad designed for high speed and dense traffic is a matter of the utmost importance. Not only is this so for directing the course of traffic under normal conditions, but it is infinitely more important under abnormal conditions such as delays and accidents. The short length of this line and the great number of stations suggested a means of communication that would be easily handled

by any employe and readily accessible, in short,—a telephone system.

The communicating system consists of a train dispatcher system and a message system laid out with the object of anticipating the channels of communication that are likely to develop. The nature of traffic divides the line into two parts, one part is concerned with the operation of trains on the main line between Harlem River and New Rochelle and Portchester. The other part is concerned with the operation of trains between Harlem River and White Plains.

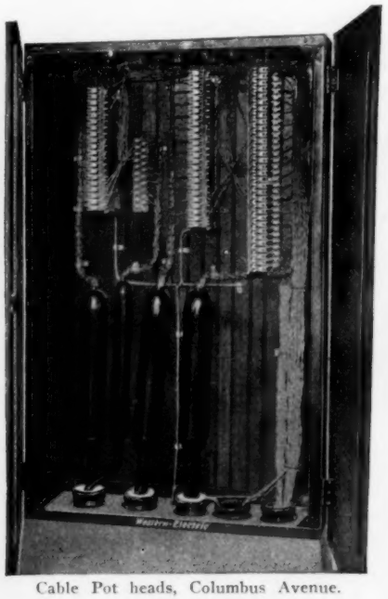
The dispatcher system consists of two train wires, one of which follows the main line to New Rochelle connecting into the towers in this section. The other circuit follows the main line to the junction and continues to White Plains connecting the towers on the White Plains branch and the four-track section. These train wires are so arranged that they may be handled by one dispatcher, or each may have a separate dispatcher as may be necessary.

There are three message wires, as follows: one local wire connecting all stations on the line, another local line connecting all stations on the White Plains branch such as towers, express stations, and terminals. In addition there is a line between towers whereby the towermen may communicate without using a through line. This line is intended to be used for the purpose of a future train describing system.

Direct communication is provided as follows:

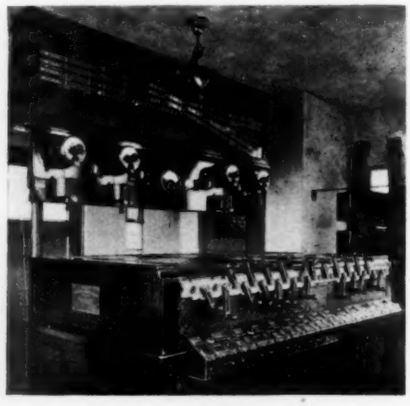
(1) Interlocking towers on the four-track section on three wires.
(2) Interlocking towers on the double-track sections on two wires.
(3) Express stations on the four-track section on two wires.
(4) All other stations on one wire.
(5) The principal executive offices are connected on the message lines.

Test Panel and Selector Case, Columbus Avenue Tower.

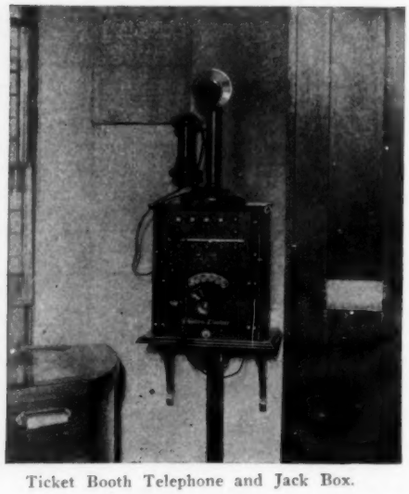


Cable Pot heads, Columbus Avenue.

Station Platform Telephone.



Interior of Operating Room, Columbus Avenue Tower.



Ticket Booth Telephone and Jack Box.

An additional line is provided throughout, known as the maintenance spare, that can be substituted for defective wires in the other lines and also can be used for special conditions should traffic temporarily develop between two points.

Telephones are installed on each platform at express stations and on alternate platfroms at local stations, also at the entrance to the interlockings remote from the towers and where the distance between stations exceeds one mile, outlying telephones are provided. Thus the trainmen can readily communicate over the system from the platforms, and at no point on the line does a track-walker have to travel over a half-mile to report trouble.

Since the local lines are separated into two parts there cannot be direct communication between the stations on one line and those on the other, for instance, the local stations on the New Rochelle extension cannot call directly the local stations on the White Plains branch, neither can the latter call the local stations on the four-track section. Communication between these points requires the local lines to be connected together, which is done at the switchboard located in the executive offices at 180th Street, this board being provided mainly for the use of the offices.

The intercalling system is the nearest equivalent in telephony to the familiar Morse system in the telegraph. With the latter a code call is made which is audible at all the stations on the line. The former improves on this, making the call only at the station desired and then giving both an audible and visual indication until answered, besides informing the person making the call it has been recorded. This system consists of a means of selecting any station desired in response to its call number, as set up on a calling key, and the necessary indicating and speaking apparatus. The chief elements of the system, therefore, are the Western Electric intercalling key and the selector.

The intercalling key forms a part of a jack box, which is, in fact, a miniature switchboard in itself. It consists of two indices adjusted by a knurled knob; the large index, figures 6 to 16 inclusive, constitutes the first part of the call known as the group number and the small index from figures 1 to 5 inclusive is the second part of the call or selector number. The selector numbers are repeated into each of the group numbers, and it is therefore possible to make 55 different calls with this arrangement.

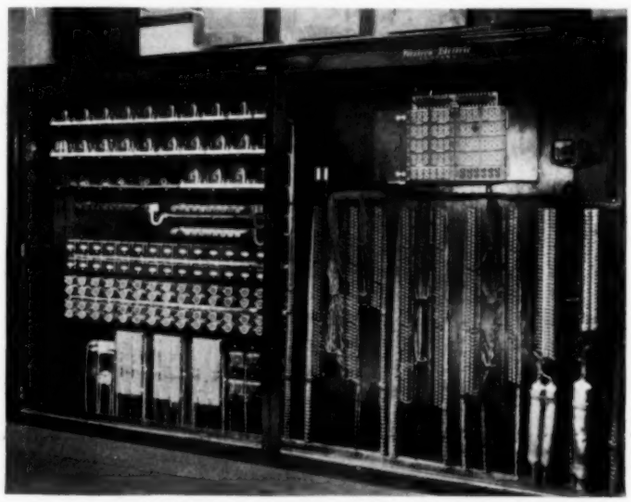
The upper part of the case contains the indicators and the means of connecting into any line. The vertical row applies to each line as numbered. The lamp at the top shows the line on which the call has been made and the jack is where the plug is inserted for communication on this line; the push button being used to extinguish the light and stop the buzzer when answering the call. The "on" and "off" switch is provided to save the battery on the indicating apparatus when no attendant is present. This indicating apparatus is omitted at outlying telephones where there is no attendant.

The sequence of a communication is as follows: (1) obtain from the list the call numbers and line by which the desired parties can be reached, set the indices to the call numbers and insert the plug in the jack of the proper line; (2) ascertain if the line is in use and if so change to another line not in use and give the calling key a turn. If the call has been received a buzzing sound will be heard in the receiver, known as the "answer back"; (3) in answering the call, the plug is inserted in the jack below the indicator and the push button operated. The parties are now in communication and when conversation is through, they merely hang up the receivers. The communication is thus between the two parties concerned, which saves time and misunderstandings.

Selectors operate in response to the stepping impulses from the intercalling key. The station called is selected by the predetermined position of two contact arms on the stepping wheel of the selector establishing the holding circuit of an indication relay after a combination of steps corresponding to the call numbers. The selector consists of a stepping and a holding magnet of high resistance bridged across the line, the former being quick acting and the latter slow releasing.

The selector arm is instrumental in establishing the circuit of the holding relay and buzzer in series with a resistance coil bridged across the line—there being no passing of contacts except that affecting the circuit of the slow-releasing magnet. The operation of this buzzer varies the resistance of the circuit, causing the buzzing sound for the answer back. When the intercalling key completes its revolution the circuit is deenergized and the stepping wheels return to their starting position by the action of the hair spring.

Communication between parties on lines that are not directly connected can only be secured, as stated, through the switchboard operator, who can connect the desired parties, or may be secured by the party making the call after the lines are connected at the switchboard. It is apparent that any call may be made through the switchboard operator, as would be necessary when the call number of a party was unknown.



Telephone Apparatus Cabinet, 180th Street (Main) Station.

The chief object of the switchboard is for the use of the executive offices, it being handled by the operator who attends the public telephone switchboard. A great number of these offices are closed at night when an operator at the switchboard is not necessary. In this case, if the business on all lines is light they may be connected together at the switchboard so that every point is intercommunicating. If this is undesirable, means are provided whereby the towerman at Columbus Avenue Junction can bring the lines together for direct communication. In view of the non-attendance of the switchboard operator at certain intervals, some of the executive offices are connected into the message lines on selectors.

If desired, the system can be made entirely intercalling on all lines at any time, thus dispensing with the use of the switchboard. To do this it is only necessary to connect lines that are not directly connected to the jack boxes so that they can be used for communication and calling. A station can thus get into the line to call another station on a line from which it could not itself be called. This avoids increasing the number of selectors bridged on the lines with the consequent undesirable increase in the voltage of the intercalling battery.

The train wires are reserved exclusively for the dispatcher's use and ordinarily, communication can be had on these lines simply by inserting the plug in the jack. The dispatcher is provided with a head receiver and individual calling keys to expedite calling the towermen.

The telephone lines are made of paper-insulated, lead-covered cable on No. 10 B. & S. gauge copper wire, placed in underground conduits.

The cable for the four-track section consists of 16 pairs of which eight pairs are at present in use. Four pairs are for future use when the line is extended and four pairs are spare. The cable for the White Plains branch consists of 12 pairs of which six pairs are at present in use, four pairs for future use, and two pairs spare. On the New Rochelle extension a 10 pair cable is employed, of which six pairs are in use, three pairs for future use, and one pair spare.

The cable is looped into the buildings where it terminates in pot-heads, the connections being taken off on rubber covered wire to a terminal strip and protectors. At stations these pot-heads are placed in the selector case, the lines being connected through and the station sets "bridged in." At towers, an iron case is provided for this purpose, from which connections are made for each wire to the test panel where all lines are available for testing and cross connecting.

The talking circuit is somewhat modified from the standard telephone circuit by the use of repeating coils interposed between the line and the telephones. These coils have an insulation between windings that will withstand 1,000 volts a. c., and are to prevent persons who are using the telephone from being exposed to the lines. They are connected through condensers so as not to interfere with the calling circuit.

In order to obtain a greater efficiency when a number of persons are listening on the line, the circuit is arranged so that when listening the receiver alone is bridged across the secondary of the repeating coil and at the same time a retardation coil is connected in series with the receiver to prevent excessive side tones. Operating the foot switch also closes the circuit through the primary of the induction coil, the transmitter and battery. This arrangement gives a greater receiving and transmitting efficiency than can be obtained by the ordinary telephone circuit.

The dispatcher has a three-widing induction coil. The tertiary is connected through a condenser to the line, the receiver is in series with the secondary, and the primary is in series with the transmitter and battery. The insulation between the tertiary and the secondary and primary is tested to withstand 1,000 volts a. c., thus protecting the dispatcher from actual contact with the line wires.

Test panels are provided in each interlocking tower. These consist of an arrangement of jacks whereby in the simple manipulation of plugs, lines may be disconnected in either direction for testing purposes, defective wires in one line may be patched by sound wires of another pair, lines may be bridged together, and the apparatus may be transferred from one pair to another.

A six-volt portable storage battery is used for the talking circuit, a 36-volt battery for the operation of the private branch exchange switchboard, and a 135-volt battery for the intercalling system. These batteries are of 20 ampere hour capacity and are charged by the motor generators used for the interlockings.

The battery for the intercalling system is located at the general offices which are at one end of the line. It is apparent that injury to the cable at this point would cripple the intercalling system. To provide for an emergency of this kind the main storage battery of the signal system can be used for the intercalling system, a switch for this purpose being provided in the apparatus box at Columbus Avenue tower.

In the beginning of this road, no provision was made for a pole line and the right-of-way in many places does not have sufficient space to build one. In the absense of a pole line, the catenary bridges are available from which the telephone cables could be suspended by messenger wire. A construction of this kind has nothing to recommend it except low first cost. A cable so suspended would be attached to the bridge legs directly under the 11,000-volt feeders. In case of accidental contact between these wires and the cable, it does not take much imagination to see that the results would be disastrous to the cable and perhaps fatal to persons using the telephones. In this location the cable would be almost parallel with the catenary wire and in a horizontal plane below the feeder wires and therefore in the strongest zone of the inductive disturbances.

These considerations naturally suggested building a conduit system for the telephone and signal cables which was readily taken up and acted upon as part of the policy in constructing the road. The building and maintenance of a pole line with over 45 wires on it would be a matter of considerable expense and these wires should be susceptible to damage from every storm with a possible interruption of traffic. Further, wires placed underground are not subject to the deteriorating influences of the weather and will therefore have a much longer life and a full salvage value.

The conduit consists of a four-duct section of clay tile and of bituminized fibre. Each tile is two feet long having circular ducts 3½ inches in diameter. The fibre is three inches in diameter, with ⅜-inch wall, and seven feet long with socket joints.

The tile duct is used in cuts and the fibre conduit is used on the fills on account of the greater elasticity of a conduit line with this construction.

The entire telephone system was manufactured and installed by the Western Electric Company.

Burlington to Use More Telephones

In the very near future the dispatching of trains on the Creston division of the Burlington railroad will be by telephone, instead of by telegraph, as the dispatching is now carried on. The telephone system has been installed on several divisions of the Burlington road and officials say that it has proved very satisfactory, as oral orders for the movement of trains prove far more efficient than the system which has been in voque ever since railroads have been known.

When the new system is installed the same number of dispatchers and the same men as now employed will be continued in the positions which they now hold.

It is understood that materials have been ordered for the purpose of installing the new system on the Creston division, and that, as soon as it arrives, the work of construction will be commenced. It will be early in the summer before the telephone system will be in working order.

Telephones on Branch Lines

By L. H. Osthoff

ON many roads using the telephone for the handling of their trains, there are small branches tapping the trunk lines, which for a very small portion of the time must be in communication with the main line dispatch to "OS" and occasionally copy orders. To this end it is usual to install on the branch, a telephone circuit connected to the main line circuit.

If this branch is made standard and selective ringing equipment, to be operated by the dispatcher, is installed, the normal position of this circuit must necessarily be when it is connected to the main line circuit, in order to allow of signaling on the branch. And if this circuit is the only one on the branch, which is often the case, all local interline work must be handled over it, which on the main line would be taken care of by another telephone circuit or the telegraph. Under these conditions it is necessary to have the dispatcher call in the

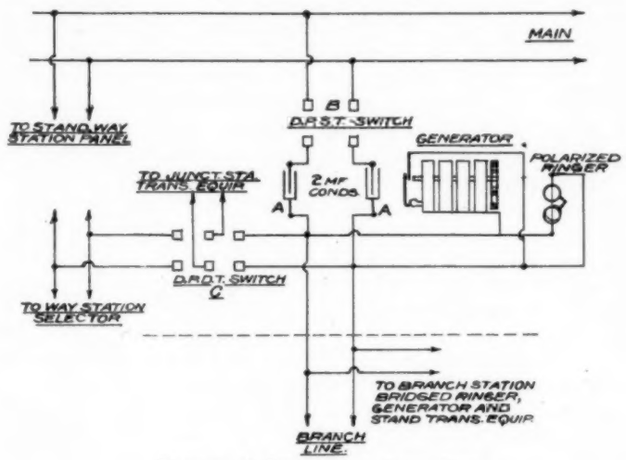


Diagram of Branch Line Connections.

branch stations each time they have need of one another or of the junction station. Then if the dispatcher has need of the main line circuit, while they are using the branch circuit, it is necessary for him either to call in the junction station and ask him to cut off the branch or ask the branch stations to wait. There may be times when a dispatcher can do this "central office work," as one dispatcher defined it, but it will more often be found that it is taking him away from the much more important work of expeditiously moving and meeting his main line trains.

Such conditions are also very unsatisfactory for the branch stations, whose work is just as necessary, although not so important as that on the main line. And should the junction station after cutting the branch off fail to cut it back they are left without any means whatever of signaling.

And in addition to giving very unsatisfactory service, on a branch line such as I have described, the cost of operation for the selective signaling equipment is high. The initial cost of the equipment is also high, making interest and depreciation quite an item, and if the branch circuit be located any distance from the location of the main signaling battery, this battery must be maintained at a higher voltage than would otherwise be necessary. This will bring up the operating cost of the circuit considerably, especially if the battery be dry cells, which is the most common form in railroad work today.

A much more satisfactory system for the operation of branch line telephone circuits can be found, I believe, in the use of the generator and polarized ringer, if there are not too many stations on the branch. Standard transmission equipment should be installed, but in place of the selectors a generator and polarized ringer should be bridged across the line. At the junction station it will be necessary to install the generator and ringer, and also one dp-dt and one dp-st switch, and two condensers of one or two mf. capacity each. These condensers *A*, installed as shown in the diagram, prevent the main line signaling battery from flowing through the signaling equipment on the branch.

The single throw switch *B* is used to cut the branch circuit to the main line circuit, when necessary, and the double throw *C* to cut the transmission equipment at the junction station to main line or branch circuit as required.

With this equipment the branch circuit can normally be kept cut off from the main line, allowing the branch stations to handle their local business without interruption, either to themselves or the dispatcher. And when it is necessary for them to communicate with the dispatcher or he with them, it is only necessary to call the junction station and have the two circuits cut together. Of course when the dispatcher wants a branch station it is necessary for the junction station to call them in with his generator, but as this is seldom, the delay is so slight that it need hardly be considered, and is not at all comparable to that under the system whereby the dispatcher must handle the signaling.

Using standard transmission equipment with the high resistance receiver in series with a condenser, it is possible to ring any station on the branch circuit, even though all the receivers on the circuit be down.

Signaling on the branch line when cut to the main line has no effect whatever either on the transmission or the signaling of the main line circuit. The sound in the receivers while working the generator is easily "talked" through, and sounds much the same as the selector answer-backs. In experimenting I have found it possible to ring the junction station main line bell while working the generator at this station, and in fact the generator current has no appreciable effect whatever on the selectors or their operation.

Operators Ordered to Slow Down

Orders requiring the hello girls to travel at a more moderate speed when repeating the call from subscribers, has been issued by the telephone company at Richmond, Va. Usually the call number is repeated with such lightning speed that the subscriber has not the faintest idea what the operator said and no opportunity is given for correcting an error. It is believed the order to call back the number slower and more distinctly will not only prevent mistakes but save time.

Electricity and Sound

In delivering the presidential address to the British Institution of Electrical Engineers, W. Duddell, newly elected president of that body, made the following remarks pertinent to the development of telephony:

Sound consists of air vibrations; therefore all electrical methods of producing sounds resolve themselves into designing electrical motors whose work is to shake and vibrate the air. Now the tleephone receiver is such an electrical motor, and the laws that govern the efficiency of electric motors in general also govern the action of the telephone receiver.

I do not know of many researches on the efficiency of the telephone receiver, yet the question is really a practical one and of considerable importance. The telephone receiver may be looked upon as an alternating-current motor. It receives electrical energy, which it converts into the mechanical form in the motion of its diaphragm, which energy is transmitted to the air as sound waves. There is no special difficulty in measuring the electrical energy supplied to the telephone receiver to a moderate degree of accuracy. The amount of this energy that is transmitted to the diaphragm is much more difficult to estimate. The real difficulty is the determination of the amount of energy of the sound waves. If we possessed any apparatus by means of which we could measure energy of sound waves we could not only determine the efficiency of the telephone receiver, but the apparatus would have many other useful applications. It is curious to think that up to the present we have no unit or standard of sound. We cannot specify its strength or intensity. Even the comparison of two sounds by the ear is very inaccurate; nowhere nearly as accurate as the comparison of two lights by means of the eye. This want of standards and methods of measurement is, I believe, one of the causes that have retarded progress in the science of sound. Can electricity, the handmaid of all the other sciences, help in this direction?

Electricity has been applied to many investigations into the characteristic qualities of sounds, and especially to those qualities which characterize the vowels. Sir John Gavey, in his presidential address, and Messrs. Cohen and Shepard have published many interesting results which have been of use in enabling us to decide what is the range of frequencies for which our telephone apparatus must be constructed to enable good articulate speech to be obtained.

Electricity can be utilized for the detection of small sounds. Two microphones attached one on each side of the hull of a ship enable the sounds of distant submarine bells to be heard through the water and, further, enable the captain to tell whether the sounding bell is fore or aft or broadside on, and approximately the bearings of the bell. As a means of warning ships of the dangers of the coasts, submarine sources of sound and electrical means of detecting them are destined to play a considerable part in the future. A number of stations and ships are already equipped.

The production of electrical currents whose variations reproduce the variations of the air pressure in the sound waves is of greatest importance. The present microphone is only able to deal with comparatively small currents, and therefore, good as it seems, it has serious limitations. One cannot look upon the variations in the electric currents produced by the microphone when spoken into as truly representative of the sound waves. Microphone diaphragms possess, like most vibrating bodies, free periods of their own. One has only to produce in front of a microphone a series of notes which sound approximately equally strong, and it will be found that the current variations produced are enormously greater for some notes than for others, and that great distortions take place. There is no very great difficulty in proving that this occurs for notes with approximately the same periodic time as one of the free vibrations of the diaphragm. Another difficulty resides in the fact that the resistance of the microphone is not connected to the pressure of the sound wave in any clearly defined way, at any rate for the strengths of sound used in practice, so that the microphone must be looked upon as being very far indeed from an ideal measuring instrument. Many researches have been made to try and invent new microphones. We seem to know but little of the exact mechanism of the transfer of electricity from one body to another when they are lightly in contact. Probably a thorough investigation into the nature of contacts would reveal much useful information not only on the theoretical but on the practical side, and provide data for the design of new microphones, and for the contacts used in electrical apparatus. As an example of the extraordinary sensibility of a contact under suitable conditions, I might mention the contact in S. G. Brown's relay, which by means of an ingenious automatic electrical arrangement is kept in such a condition that one feels doubtful whether there is actual contact or not.

Two Dreams

You all know George W. Jackson: The most modest winner and graceful loser I ever knew, says Bramleykite in the Chicago Press Club *Scoop*.

Years ago, George had an associate in business by the name of Charley Wilson, who took good care of the financial end while George attended to the operating end in like manner.

Wilson would not pay a bill until it had run the limit and then he would give you to understand that there was no cobwebs on it. They owed me quite a sum and I needed the money, so one day I went into their office with the intention of collecting the amount. I found a number of other contractors seated about the office, when I entered; something about the hang of my lower jaw must have attracted Wilson's attention for he said: "What is the matter with you?" I asked him if he believed in dreams. He answered, "By gad, I do." Well, I said, I dreamed last night that you paid my bill. He had to join in the laugh that followed and, of course, he gave me a check.

That same evening while on my way home, Wilson dropped in the seat by my side and said, "I want to tell you how you came to get that dream idea over on me so easily this morning. Some years ago I was at the head of a telephone company down in Ohio, and in running the lines I only had trouble with one man. He was one of those people who describe a circle with an offset, or, in other words, a crank. He had a fine row of trees in front of his place and a few of the twigs on some of the outer branches interfered with our wires, but be ever so nice, and do what I might, I could not get permission to trim those twigs. But one day I had an idea. After everyone had left the office at the close of the day, I lingered until the old negro janitor entered, when I asked him if he believed in dreams. Of course he did. Then I said: "You know how I have tried to get permission to trim those trees of Donewell's? Well, I dreamed that I placed a five dollar gold piece on the sliding shelf of my desk, so, and shoved in the shelf. Then when I came downtown in the morning, I looked up at those trees through force of habit and was surprised to see that those twigs were nicely trimmed. I came into the office and on drawing out the desk shelf I was more surprised to see that the five dollar gold piece was gone. Now what do you think of that for a dream?' He scratched his head and said not a word, but in the morning, the twigs were trimmed and the gold piece was missing."

At the end of December, 1911, there was nineteen telephone systems in Peru, with 3,800 instruments and over 10,500 miles of wire. In December, 1911, the Peruvian Telephone Company resolved to increase its capital stock by $48,655, issuing 500 new shares. A company known as La Empresa de Telefonos de Arequipa y Moldendo has four centrals at Arequipa, Mollendo, Tingo and Cachando. The material used, including the instruments, is all German.

Automatic Call Distributing

By Arthur Bessey Smith*

THE manual telephone switchboard operator works at her greatest efficiency during the busy hour, when the calls are coming in at their maximum rate for the day. As the load on the board falls off, each operator has less to do. Consequently, telephone companies attempt to maintain the efficiency of their operators by reducing the number at times of light load. Though obviously cheaper than maintaining the full force all day, it leaves much to be desired.

When an operator has to handle more than one position, she cannot answer calls as fast, since she must reach farther and with more effort on each connection. The reduction of efficiency is clearly shown by the curve in Fig. 1. Starting with a standard of 100 per cent as the load which she can handle at one position, she can care for only 73 per cent as many calls when two positions are assigned. For night work, when one operator must tend many positions, the efficiency is very low. Ten positions give us a load only 18 per cent of her full one-position ability. Thus the expedient of adjusting the number of operators to the load results in great loss of efficiency without making the work any easier.

If the load curves of each of the positions on a board be examined it will be found that the busy periods do not occur at exactly the same time on all positions. This causes a further loss in efficiency. Fig. 2 was taken from an actual peg count and illustrates the inequality very well. From 6 to 7 a. m., position 9 is the only one to have an appreciable load. From 10 to 11 a. m., positions 4, 6 and 9 have an increased load, while 5, 7, 8 and 10 have very much less to do. The afternoon peak comes between 4 and 5 on positions 5 and 9, between 5 and 6 on positions 7 and 10, while it is as late as between 7 and 8 on positions 4, 6 and 8.

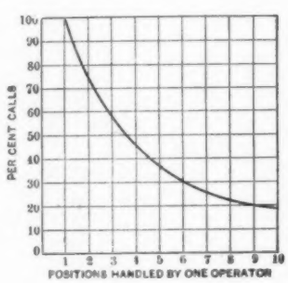


Fig. 1.

In general, the traffic manager aims to equalize the load by rearranging the lines at the immediate distributing frame so that as far as possible the busy time will be equalized. This is a matter of difficulty, for it requires constant attention and much thought and labor. Very few exchanges are successful in securing it.

There is another great loss of efficiency due to the evil of "rushes." For instance, when we say that 225 calls were handled by one operator in one hour we have only a partial idea of her speed. During that hour the calls did not all come in an even, steady stream. There were periods of rush, when she may have been answering calls at the rate of 700 or 800 per hour, followed by short periods of slow calling or even idleness. The observations of experienced operating companies has shown that even during the busy hour, an operator is actually working only 50 per cent to 67 per cent of the time, the latter figure being unusual.

*An A. I. E. E. Discussion.

Formerly the only known method of reducing the inequality was "team work." Each operator is trained to keep lookout over the position to her right and left so that if her neighbor has more than she can do, assistance can be given. Though this reduces the evil a little, it still fails to get at the root of the matter.

The ideal condition in manual operation would be reached if there would be secured an absolute uniformity of load on all the operators. We could then reduce or increase the number of positions to suit the load, each working at full efficiency all the time. The momentary rush would lose its terror, being lost in the general average. Since one position is as busy as another, one has no necessity for helping another. The elimination of the answering cord reduces her manipulations very materially. On a conservative basis it is believed that this will save about 22 per cent of the time required per call.

In addition to the 22 per cent saving in time secured by simpler operation, we have a large saving in the uniformity with which calls come to each operator. Under good operating conditions at ordinary manual boards, the operator is actually engaged only two-thirds of the busy hour. By means of the call distributer this can be raised to five-sixths, or at a loss of only ten minutes in the hour. This alone amounts to a 25 per cent increase in efficiency. The saving of 22 per cent in time per call means a gain of 28.5 per cent in efficiency, which taken in connection with the 25 per cent makes a total increase in efficiency due to these two causes of 60.6 per cent. This takes into account only the busy hour load.

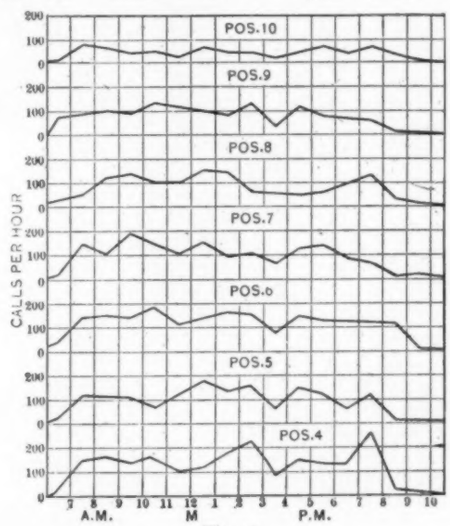


Fig. 2.

Adjustment of Operating Force to the Work. It has been found in ordinary practice that the average number of calls answered by an operator is about 75 per cent of what she answers during the busy hour. This is known to be due to the loss of speed incurred by having one operator tend two or more positions. With the traffic distributer no operator ever has to tend more than one position, because as the force is reduced, the vacant posi-

tions are made busy, thus restricting the traffic to the occupied positions. Thus each girl may be held up to her busy hour load, so that no loss need occur from this source. This will add about a 33 1-3 per cent to the operator's average all-day efficiency. The number of positions occupied can be in direct proportion to the total traffic.

Saving in Operators' Salaries. Since the operators' speed has been increased it will take fewer operator-hours to run the board. The increase of 60 per cent in busy hour efficiency mentioned above means a saving of 37.5 per cent in force, or a busy-hour force only 62.5 per cent as large as under ordinary conditions.

The increase of speed of 33 1-3 per cent in all-day work means another reduction of 25 per cent of the operator-hours necessary to run the board, or a force equal to 75 per cent of the old force. Taking both these reductions into account makes the new operator-hours 47 per cent of the old. We may say, then, that with the automatic call distributer a manual board can be operated with less than half the operator-hours and less than half the operators that are now necessary with ordinary methods.

A Comparison. The advantages of the automatic traffic distributer over ordinary manual operation are most strikingly shown by direct comparison. In the following list the traffic conditions which reduce efficiency are given with the remedy which each system proposes.

GENERAL HOURLY VARIATION.

Ordinary Manual. Adjust number of operators to suit load. Greatly reduce efficiency at light load. Inferior service at overload.

Call Distributer. Adjust number of operators in exact proportion to load, each at full efficiency.

HOURLY VARIATIONS BETWEEN POSITIONS.

Ordinary Manual. Use of intermediate distributing frame and team work.

Call Distributer. The difficulty does not exist—the load is equal on all.

MOMENTARY RUSHES, VARIABLE BETWEEN POSITIONS.

Ordinary Manual. Team work.

Call Distributer. Uniform for all operators.

REDUCED EFFICIENCY WHEN TENDING MORE THAN ONE POSITION.

Ordinary Manual. Team work, but a very slight remedy.

Call Distributer. Difficulty does not exist, as each operator tends one position at all times.

From the foregoing it is seen that regarding every difficulty for which the ordinary manual has a partial and inadequate remedy, the automatic call distributer meets the issue squarely by removing the cause.

The automatic call, or traffic distributer, offers a very satisfactory intermediate step between manual and full automatic operation. If the human operator is to be retained at all, this system retains her services under the most favorable conditions. Those systems in which the operator is entirely cut off from the connection after it has been established, fail to secure the advantages of the much-talked-about human intelligence and personal touch. However, the writer is of the opinion that the human intelligence can be to advantage dispensed with, for the majority of telephone connections, and that full automatic will give a class of service superior to that of any other device which has so far been discussed.

A telephone line is being strung between the capital and Ixtapalapa, Mexico. Another line will connect up San Nicolas Tolentino.

George Fitch on the Telephone

The telephone is the modern invention which would most nearly upset our forefathers if they were to return and look us over, says George Fitch. They might marvel at the electric light and climb trees to escape the trolley cars, but if a Pilgrim father were to deposit a conversation in a small box and find it later in the ear of a personal friend 1,000 miles away he would rise up and yell for a witchcraft commission.

The telephone has made neighborhoods out of states and families out of cities. It has put the grocer and butcher within arm's reach of the housewife and has doubled the life of every pair of shoes. It has put the farmer into the city in three rings and a cuss word and keeps the young man within reach of his sweetheart, no matter how faithful the bulldog may be at the front gate. The telephone enables a man to go 100 miles and return while his feet are on his desk, and it enables lovely woman to talk with her friends across the city until her arm gets paralysis.

The telephone is a vast convenience, and without it the world would die of loneliness and sore feet. But like all blessings, it is not appreciated. Thirty years ago, it took an hour to go downtown and get the baseball scores. Nowadays if a fan waits half a minute at the telephone before his suspense is relieved they have to burn sulphur all over the house to get the conversation out of it.

Depreciation Reserve Inadequate

In discussing the proper method of accounting for the costs of an extension of plant proposed to meet a demand for a higher grade of telephone service, the Railroad Commission of Wisconsin says:

It may seem at first that the value of the property discontinued should be added to the cost of the new construction in determining the total cost of service, but this loss should rather be handled in the same way as decreases in property value due to wear and tear. The depreciation reserve should ordinarily be sufficient to provide for wear and tear, obsolescence and inadequacy. It has been a very common experience of telephone utilities that portions of their systems have had to be discontinued and replaced by more modern types of equipment before such portions were actually worn out. The present instance seems to constitute such a case. From the testimony it appears that the city of Altoona first received telephone service in 1900. There has been a considerable development of business there since that time but the class of service furnished is not what would ordinarily be considered adequate for urban service. In view of all the circumstances it seems that the loss from discontinuing all use of certain portions of the property, with the introduction of a higher grade of service, is such a loss as should be provided for in the setting aside of a depreciation reserve. This inadequacy is one of the elements which tends to make the composite life of a telephone utility of short duration. R. R. Com. of Wis., in C. G. King et al. vs. Wis. Tel. Co.

The Rhymney Railway Company have put into operation over their system, which extends from Cardiff into the eastern and western valleys of Glamorganshire, a new train control system making use of the telephone, the first of its kind that has been installed in Great Britain. It was provided by the Western Electric Company, of North Woolwich. By means of a system of telephones to all signal-cabins, junctions, and stations on the line, the whole of the train working can be completely and directly controlled from the head office at Cardiff. It is believed that as the result of the new installation much time will be saved.

Of Interest to the Trade

By A. L. Haase

McMeen and Miller Incorporated

The well-known engineering firm of McMeen & Miller, which for the past ten years has existed as a partnership between Samuel G. McMeen and Kempster B. Miller, has been incorporated under the same name. The personnel of the new firm includes Mr. McMeen and Mr. Miller, the former partners, and as a new member, Mr. Leigh S. Keith, who for a number of years has been connected with the firm in the capacity of managing engineer.

K. B. Miller

The incorporation of this firm comes as the result of its constantly widening field of operations. The old partnership was established, primarily, to conduct a general telephone and engineering and patent expert practice. Mr. McMeen and Mr. Miller were the first engineers to establish themselves in a general telephone engineering business, detached from all manufacturing and operating concerns. The scope of the concern has rapidly widened, so that the greater bulk of the work of the firm for a number of years has been in the line of consultation, design, construction and management in connection with properties in the railway, light and power fields, and investigations of public service corporations for private and municipal interests.

Mr. McMeen, who is the senior member and vice-president of the new firm, is well known as one of the pioneer telephone men of the country, having served the Central Union Telephone Company in all capacities from operator to chief engineer. Later he had wide manufacturing experience with the Western Electric Company, and since entering into partnership with Mr. Miller, has become well known as a designer and constructor, and as an executive of public service corporations. Among the more recent notable work done by Mr. McMeen might be mentioned the engineering, construction and subsequent executive management of the San Francisco Home Telephone Company, and his services as president of the Mount Hood Railway & Power Company, of Portland, Oregon, during the later stages of its plant construction and previous to its consolidation with the Portland Railway, Light & Power Company.

S. G. McMeen.

He is at present located at Columbus, Ohio, where he is devoting practically his entire attention to the affairs of E. W. Clark & Company, of Philadelphia. He is president of the Columbus Railway & Light Company, one of the Clark properties, and has the executive management of all of the allied electric properties in Columbus. He also serves in an advisory capacity in the Clark properties throughout the country.

Mr. Miller, who is president of the new firm, is perhaps best known to the world as the author of "American Telephone Practice," for many years considered the standard treatise on telephony the world over. Mr. Miller, after graduating from Cornell, served a short apprenticeship in the lighting and power departments of the Thomson-Houston and Westinghouse factories, then entered the telephone manufacturing field in Chicago, and for many years was identified, as engineer and manager, with the Kellogg Switchboard & Supply Company. Since entering the field of general consulting engineering, his talents have been directed to a wide variety of works, some of them of notable importance. He has devoted much of his attention to special investigations of public utilities, both from the engineering and financial standpoints. He is general manager of the Central Oregon Power Company and is at present devoting much attention to the development of hydro-electric projects on the Deschutes River, in Oregon. He is also acting as consulting engineer on special problems for a number of electric railway, light and power companies, particularly specializing, in this connection, on the subject of electrolysis of underground structures.

L. S. Keith.

Mr. Keith, the secretary-treasurer of the new firm, is a graduate of Massachusetts Institute of Technology. For a number of years after graduating he was employed in the engineering department of the New York Telephone Company, the later years of this service being spent in the making of special investigations directly under the chief engineer. About four years ago he entered the employ of McMeen and Miller, and has been engaged in a wide variety of engineering work, particularly relating to public service investigations of light, power and telephone properties, and various special problems in the field of electric railway work, such as the location of substations, the design of feeder systems and the prevention of electrolysis. For the past three years he has been managing engineer of the firm, so that in becoming one of the principals the change involved is more of name than of function.

The organization of the company has been increased so as to include a full corps of experienced engineers

fitted in every way to handle properly, not only the general work of a consulting engineering business, but, also, the more specialized details of economical and efficient design and construction of steam or hydro-electric stations, high tension transmission lines, and overhead and underground distribution systems.

Switch Dial Set of New Form

One of the most recent accomplishments of the Thompson Levering Company of Philadelphia is the putting out of a Peerless switch dial set T-2005. This dial set is similar to the T-2000 of the same company, but is in a larger case, the same as the government standard size.

The bridge and arms are guaranteed to an accuracy of one twenty-fifth of one per cent and have four coils each with values of 1, 10, 100 and 1,000 ohms in each arm. The rheostat is composed of four dials of ten coils each with values of 1, 10, 100 and 1,000 ohms, respectively, adjusted to an accuracy of one-fifteenth of one per cent. A universal Ayrton shunt forms a part of the set. Provision is made for outside galvanometer and outside battery when these are desired. A special designed switch is a part of the regular equipment. It is claimed that these switches have practically eliminated contact resistance.

The batteries used in the set are of the ordinary commercial type obtainable at any supply house so that field engineers need never be delayed in the use of this set while waiting for batteries to come from the manufacturers, it being possible to go to the nearest supply house and use the ordinary battery. The weight of the set complete is 12½ pounds. Its size is 12½x8¼x5¾ inches. The box is finished in either oak or mahogany and case complete in carrying case of sole leather with shoulder strap at a very trifling increase in cost.

This set and the Thompson-Levering high sensibility galvanometer were exceedingly popular among the visitors at the convention and the company is confident of a large business on it.

Mr. Thompson, who was in charge of the exhibit, informed us that the Thompson-Levering instruments had been officially approved by the engineering departments of the largest public service corporations in the world and that his instruments are recognized as standard by such buyers as the American Telephone and Telegraph Company, Western Union Telegraph Company, Postal Telegraph-Cable Company, and a large number of the associated Bell companies and a great many independent telephone companies throughout the country, including the largest one on the Eastern coast, the Keystone Telephone Company of Philadelphia, as well as by the United States government, the largest railroads in the country and a great many testing engineers of commercial and scientific companies.

Automanual "Trust Certificates"

The Telephone Improvement Company, Monadnock building, Chicago, has recently worked out a plan whereby operating telephone companies whose equipment is approaching the period of obsolescence or is incapable of expansion to meet growing needs, can make a complete re-equipment without increasing their capitalization to take care of their expenses. The replacing of switchboard equipment always necessitates a further demand on the stockholders or an increased capitalization in order to get money enough for replacement purposes.

By the Automanual "Trust Certificate" plan recently evolved by the Telephone Improvement Company, it is now possible for these operating companies to make replacement, using what is claimed to be the very highest type of switchboard equipment—"The Automanual." The company sends engineers to any plant desiring a re-equipment, and after demonstrating a saving in the use of the Automanual over other systems, they are able to assist the company by issuing Automanual trust certificates which are redeemed from the saving effected in the operating of the exchanges.

This Automanual trust certificate is a plan for operating telephone companies which is very similar to the system used by the biggest financiers in the world, namely, the amortization bond system by which all large railroad and other public utility corporations are accustomed to obtain finances for replacement work. The New York Central and Hudson River Railroad has been buying railroad cars for over 10 years, using the car trust certificate or interest bearing amortization bond to secure money to pay for the cars.

Since the plan has worked out so excellently with the large financiers and railroad companies and is thoroughly approved as a system of finance, the Telephone Improvement Company has evolved a system whereby it can be used by the Independent telephone companies in making re-equipment, installing Automanual systems. It will probably prove of interest to a great many operating telephone companies, if they will address Garrison Babcock of the Telephone Improvement Company, asking for an outline of the plan.

How Anchors are Made

The Vote-Berger Company at La Crosse, Wis., had on exhibition at the recent convention a set of D. & T. anchors in the process of formation. The first was the solid steel rod. The second was that of swaging ten inches of the rod at one end. The third was the rod after the swaged end had been fashioned into a cone with a sharp point. The fourth showed the method of bending and welding the eye. The fifth, the formation of the eye into a triangular shape so that sledge hammer blows on top of the eye will have all of the force expended to drive the anchor in, instead of to open the eye as would be the case if the eye were left round. The sixth showed the completed anchor with the leaves riveted just above the conical head.

This D. & T. anchor is an all steel anchor and can be driven into any kind of soil except, of course, solid rock. It is claimed that when the anchor is driven into the earth it does not disturb any portion of it, so that when the rod is twisted and the leaves opened the pull is against rigid earth and not disturbed or tamped earth as is true of other types of anchors which have to be installed by digging. At a recent test made of the D. & T. anchor by a large company which purchased a car load, the anchor was subjected to a strain of over 13,000 pounds. This test successfully met all of the requirements of the engineers.

On October last, a 100-subscriber magneto switchboard was given to the public service at Cali, Colombia, S. A. The work of installation was carried out by H. C. Prado, as engineer.

Exhibits of the Convention

ALEXANDER HAMILTON INSTITUTE, New York, presented for inspection its set of text books devoted to modern business methods. Many questions of the visitors were answered by W. T. B. Campbell, western representative.

AMERICAN SURETY COMPANY, New York, had as its representative W. W. Steiner.

AMERICAN ELECTRIC COMPANY, Chicago, exhibited a full line of telephone switchboards and apparatus. The Burns adjustable telephone brackets were much in evidence, also a late type of the Burns 50-line p. b. x. switchboard. Common battery apparatus as well as magneto was shown together with many other devices of the company. Representatives in charge of the exhibit room were Eugene L. Brown, P. C. Burns, W. T. Curtis, L. G. LeBourveau, C. A. Anderson, Geo. B. Pike, Ernest Wetzler, Oscar Warner, A. B. Ferdinand and F. B. Boice.

JULIUS ANDRAE & SONS COMPANY, Milwaukee, Wis., exhibited a two-position magneto switchboard equipped with three hundred lines. Many other products which the Andrae company handle were also on display. The representatives present were salesman Mackay, M. H. Croswell and J. C. Schmidtbauer.

AUTOMATIC ELECTRIC COMPANY, Chicago, presented a complete line of automatic specialties. To show the individual operations the selectors and connectors were separated, this being done for demonstration purposes. Small automatic switchboards for private exchanges and train dispatching outfits were also shown. H. D. Critchfield was in charge of the exhibit. Those in attendance connected with the sales department were J. E. Fisher, J. H. Ainsworth, W. F. Benoist and C. G. Williams. Other representatives were Ellsworth Keith, Beverly Chew, W. F. Fricke, J. H. Finley and Seymour Hirsch.

AMERICAN TELEPHONE FIRE ALARM COMPANY, Chicago, had on exhibition the various kinds of apparatus used in connection with different types of telephone systems. The alarm system was very clearly explained to those interested by David G. Dee, chief engineer, H. D. Kennedy and Chas. R. Peel. Fire signals were transmitted directly through the exchange to the fire headquarters station of the American exhibit.

COFFEY SYSTEM & AUDIT COMPANY, Indianapolis, Ind., displayed a full line of books and forms for accounting purposes. Mr. Coffey fully explained his method of accounting to a great many interested visitors.

FRANK B. COOK, Chicago, Ill., had a full line of telephone protective apparatus on exhibition. Main and intermediate distributing frames, pole cable terminal arresters and other Cook devices were shown. Those in attendance were J. A. Moore, northwestern representative; F. A. Rader, southwestern representative of Topeka, Kansas; J. F. Tompkins, sales manager and H. Roy Cook, engineer. Souvenirs "Seeing Chicago, the Convention City" were distributed to the visitors.

SCOTT C. CUTTER, Oswego, Ill., exhibited test clamps, both galvanized and copper, for use on iron and copper wire. He also had a demonstration consisting of limbs cut from trees upon which lines were grounded when not insulated.

The CRACRAFT, LEICH ELECTRIC COMPANY, Genoa, Ill., exhibited a complete line of common battery telephone sets both of the metal and wood types. The Automaphone in its various styles was shown in connection with the Automaphone private branch exchange switchboard. A complete line of the North sets was shown, as were also the standard magneto telephone sets in both wall and desk types. Another feature was the Stewart test set, for which the company manufactures all the different parts. Those present representing the company were O. M. Leich, secretary and general manager; J. E. Myers, Ohio representative; H. W. Hogue, Indiana representative; T. J. Gullion, Wisconsin and Illinois representative; A. J. Kohn, sales manager; H. W. Lucia, sales engineer; A. C. Reid, chief engineer and V. S. McNutt, purchasing agent.

CORWIN TELEPHONE MANUFACTURING COMPANY, Chicago, featured a complete line of intercommunicating signaling system equipment, also a new type cordless private branch exchange was exhibited. Other devices were shown and explained by the representatives in attendance. Those representing the company were C. A. Bals, H. S. Cook, E. R. Corwin, C. Lewis, M. L. Johnson and C. C. Newburn.

DEAN ELECTRIC COMPANY, Elyria, Ohio, had as its exhibit a section of unit type multiple switchboard together with harmonic ringing equipment, also a full line of common battery convertible type telephones. Other features of the display were a common battery private branch exchange switchboard and a line of magneto telephones. The exhibit room was in charge of the following, who explained the various points of the Dean apparatus: A. G. Dean, president; Ray H. Manson, George A. Scoville, Homer Stevens, J. D. Kratz, A. J. Roberts, manager of Kansas City branch; W. H. Scott, G. S. Montford, H. L. Harris, sales engineer, and P. Winemiller.

DUPLEX METALS COMPANY, Chester, Pa., had for inspection in its exhibit room various kinds of Copper-Clad wire, the good qualities of which were explained by R. C. McCall, C. B. Semple, E. M. Fondersmith and L. M. Gordon, representatives of that company.

ELECTRIC APPLIANCE COMPANY, Chicago, Ill., represented by H. N. Remington, C. T. Flatt, E. J. Ridenour, R. S. Mitten, F. W. Greusel, Perry Boole, J. Bell, V. F. Alline, J. B. McMullen, J. K. Alline and S. J. Towner, displayed a full line of Cracraft-Leich telephones, Indiana Rubber and Insulated Wire Company's wire, Runzel-Lenz cords and 1,900 batteries.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia, Pa., had on display a variety of chloride accumulator types used by telephone companies and by isolated lighting plants and central stations, also the Iron-Clad exide plate for vehicle propulsion, together with an assortment of parts and accessories. Representatives of the company present and in charge of the exhibit were T. A. Cresset, sales engineer; G. H. Atkin, manager of the Chicago office; Earl D. Kelly and R. I. Baird, Chicago city salesmen.

ELECTRIC SPECIALTY MANUFACTURING COMPANY, Cedar Rapids, Iowa, represented by J. E. Matteson and G. A. Bishton, presented the Wireless Cable tester, and an all-copper ground rod. They also explained the many good points about the Little Giant cable puller for drawing cable into underground conduit, just recently put on the market.

ERICSSON MANUFACTURING COMPANY, Buffalo, N. Y., exhibited the Ericsson all steel telephones; hotel type telephone and telephone with harmonic ringer, also the Ericsson test set, and a line of Vulcan electric soldering devices. Representatives of this company present were Frank W. Pardee, H. W. Wuerffel and H. S. Bonney, superintendent of agencies.

EVERSTICK ANCHOR COMPANY, St. Louis, Mo., presented to many interested delegates the Everstick anchor, also models of the Blackburn boltless guy clamp and strain insulator. Representatives in charge were Jasper Blackburn, president, and F. C. Vickers.

GOTTSCHALK WATERPROOF SANITARY TRANSMITTER COMPANY, New York, had on exhibition the Gottschalk transmitter. It was stated that the transmitter was especially adapted for use in localities near the sea shore, where it is unaffected by the salty atmosphere. The United States Navy at the present time has several of these transmitters under test on war ships. H. R. Van Deventer very ably demonstrated the Gottschalk transmitter, explaining in full all the different points. As an aid in showing its good transmission qualities a test set was used. It is said that this test set is the only one of its kind ever on exhibition before. It was made up in the office of H. R. Van Deventer and Warren at Sumter, S. C. Mr. Van Deventer and Felix Gottschalk were present to explain the transmitter and answer the questions of the many visitors in attendance who were interested in the exhibit.

HOLTZER-CABOT ELECTRIC COMPANY, Brookline, Mass. and Chicago, exhibited its power apparatus showing automatic ringing equipment for telephone exchange work; motor generator sets for small exchanges; noiseless motor generator sets for charging storage batteries; frequency meters for adjusting harmonic vibrators. They also displayed a complete line of magneto and common battery exchange telephones. The company was represented by R. Hall, C. I. Hickman, P. C. Lenz, H. W. Hubenthal and F. P. Dismore.

ILLINOIS ELECTRIC COMPANY, Chicago, had on exhibition a full line of electric fans, pay stations, cable installation appliances, construction supplies, underground material, copper wire, Orangeburg fibre conduit and construction tools. Three representatives had charge of this exhibit room—F. A. Swanson, T. A. Brooke and J. A. Duncan, Iowa representative.

INDIANA STEEL & WIRE COMPANY, Muncie, Ind., exhibited a complete line of coils of galvanized iron wire. A demonstration was given showing the durability of the wire and other good qualities by Robert Miller, general sales manager, assisted by H. S. Hartman, assistant sales manager. Canes made of this wire were given as souvenirs to the visitors.

KELLOGG SWITCHBOARD & SUPPLY COMPANY, occupying two rooms, exhibited many of its specialties in telephone equipment, among which were magneto switchboards with double supervisory non-interfering cord circuits. This cord is said to put magneto service on the same basis of efficiency as the common battery. Common battery switchboards of the standard Kellogg construction; magneto multiple lamp signal switchboards, convertible to common battery. The equipment is full common bat-

tery of the highest type; magneto telephones convertible to standard common battery sets by the mere substitution of a condenser for the generator; standard common battery telephones in steel, oak and ebonized woodwork; low voltage harmonic ringing systems for magneto and common battery work; transformer type phantom and composite coils constructed without parallel windings; moisture-proof switchboard cords. The company also exhibited parts including the Kellogg steel reinforced rubber receivers and transmitters. The exhibit room was in charge of H. N. Faris, assisted by "Dad" Hurd, H. B. Dudley, Stanley A. Duvall, R. H. Coyne, A. S. Hallstrom, George H. Crandall, H. A. White, Edward I. Pratt, E. G. Lawrence and others. Those in attendance daily from the Kellogg company were LeRoy D. Kellogg, president; J. B. Kellogg, vice-president and general manager; J. G. Kellogg, vice-president and J. C. Kelsey, sales manager. The company's daily issues of *Telephone Facts*, containing many items of interest to the convention visitors, was a feature of the convention.

LEEDS & NORTHRUP COMPANY, Philadelphia, Pa., making a specialty of manufacturing electrical testing instruments, had on exhibition a complete line of its specialties. One of the exhibits of much interest to the visitors was the new portable testing set with Wheatstone bridge. The company also displayed its portable insulating testing galvanometer which was fully described in a previous issue; a plug decade bridge set; a large type of dal set; the well known fault finder; type P galvanometer and a small portable galvanometer for laboratory use or for convenient carrying in a case. The representative in charge was Charles S. Redding.

W. N. MATTHEWS & BROTHER, St. Louis, presented many products—the Matthews guy anchor, Matthews cable splicer, Matthews boltless and two-bolt clamps. An interesting feature of the exhibit was an actual installation of a miniature anchor in clay. The clay was then split along the line of the anchor rod, giving a "worm's eye" view of what an actual installation was like and the holding power of the anchor. Much interest was shown in the well known Matthews cable hanger and the Matthews improved Telafault. One of these Telafaults was given free to the holder of a card which bore a lucky number. At the close of the convention the numbers of the various cards given out were placed in a hat and after being shaken up the number was drawn. F. R. Parrett of the Princeton Home Telephone Company, Princeton, Indiana, was the lucky holder.

MONARCH TELEPHONE MANUFACTURING COMPANY, Fort Dodge, Iowa, displayed a toll and farm line, two position switchboard, especially designed for farm and toll service or a summer resort region. A complete line of magneto and common battery subscribers' sets was shown, together with a full line of parts for both subscriber sets and switchboards. Another feature of the exhibit were steel box subscribers' sets. Representatives of the Monarch Company were Walter H. Trimm, secretary and general manager; George O. Wilson, who travels in Indiana and Illinois; L. Q. Trumbull, sales manager; R. O. Palmer, in charge of the state of Iowa and Wisconsin, and T. L. Dunlap, who represents the Monarch Company in Missouri and Kansas.

MANHATTAN ELECTRICAL SUPPLY COMPANY, Chicago, had as its exhibit Red Seal dry batteries. The company was represented by C. H. Methot and W. F. Haeger, who distributed calendars to the visitors as souvenirs.

NUNGESSER CARBON & BATTERY COMPANY, Cleveland, Ohio, had as its representatives Warner Jones, Thomas H. Greer, J. A. Robinson and H. S. Greene, who dwelt upon the good qualities of the "1900" dry cells.

NATIONAL ELECTRIC SPECIALTY COMPANY, Toledo, Ohio, represented by F. S. Chapman and Mrs. Chapman, had on exhibition the Vac-m-lightning arrester, and demonstrated to all interested the good qualities of the arrester.

NATIONAL CARBON COMPANY, Cleveland, Ohio, exhibited the various carbon products used in telephone work, also a complete line of its dry cells. Representatives in attendance and having charge of the exhibit were C. K. Mack, Wisconsin representative; R. W. Fisher, Chicago representative; M. H. Moffett, assistant sales manager; Wallance O'Connor, Chicago representative; W. C. Wing, exploitation engineer, and C. W. Wilkins, Central Mississippi Valley representative.

OSHKOSH MANUFACTURING COMPANY, Oshkosh, Wis., displayed a complete line of construction specialties consisting of the take-up reel, also the Roberts climber. Representatives in attendance were R. L. Thayr, Chicago representative, and J. W. Wooley.

PAINE COMPANY, Chicago, displayed a full line of toggle bolts, also the Paine expansion shells. Demonstrations were given by P. M. Bryant and W. S. Williams, in charge of the exhibit.

JOHN A. ROEBLING'S SONS CO., Trenton, N. J., exhibited the various Roebling specialties, having as representatives who talked of the merits of the different products P. A. Nelson and W. H. Slingluff. Another feature of the exhibit room was Roebling's telephone cords, recently added to the company's list of products.

STANDARD UNDERGROUND CABLE COMPANY, Pittsburgh, presented an exhibit of exceptional interest to the delegates, which consisted of copper clad wire; rubber covered inside and outside telephone wire; hard drawn copper wire; switchboard cable; and lead covered paper insulated cable. The company was represented by Elbert F. Norton, W. H. Rogers, J. W. Wiley, western manager, and Russell E. Green.

STROMBERG-CARLSON TELEPHONE MANUFACTURING COMPANY, Rochester, N. Y., presented an exceptionally interesting exhibit, consisting of standard types of local and common battery telephones only. Each prominent type of equipment was dissected and arranged separately on panels so that the visitors had every opportunity to grasp quickly the individual features of every part assembled in any type of instrument. The No. 896 compact magneto telephone, the number 951 office wall type and the number 988 desk type telephones were featured as prominent standards. Several types of switchboards were displayed, including the No. A5360 drop line magneto board and the No. A5597 p. b. x. board. A unique and very compact portable cordless type p. b. x. switchboard mounted on a pedestal was displayed as a type just turned out from the Rochester factory. Another interesting feature of the exhibit was the Stromberg-Carlson Company's complete line of "Inter-Com-Phones" and other private line telephones. Mine-A-Phone and street railway telephones were important features of the convention. Those in attendance representing the company were H. C. Slemin, W. Roy McCanne, E. A. Reinke, Rochester main office; C. W. Shafer, J. G. Ihmsen, H. T. Wilms, A. M. Haubrich, L. E. LeFleur and E. F. Barber. Traveling salesmen present were C. L. Echols, Kansas; C. A. Mahan, Missouri; Paul D. Myers, Illinois; J. D. Tilburn, Texas; J. D. Wilkinson, Louisville, Ky.; E. O. Shafer, Indiana; H. T. Craig, Iowa; E. J. Dean, Ohio; F. K. Cannon, Minnesota.

STEWART BROTHERS, Ottawa, Ill., exhibited the Stewart test sets and showed how trouble can be located without cutting the line wires. A line was installed so the working of the set could be readily explained. C. D. Stewart and Ed. S. Stewart explained the different points and uses of the set to a great many visitors.

SPECIALTY DEVICE COMPANY, Cincinnati, Ohio, had on exhibition a full line of the Bierce specialties. Some of the articles on exhibition were the Bierce cable terminals and cable sleeves, so arranged the method of installation could be easily seen; the Bierce anchor in different sizes. Another feature of the exhibit was the tree insulator, which has just been put upon the market. F. N. Bierce and I. N. Becker talked of the merits of the different devices.

SUMTER TELEPHONE MANUFACTURING COMPANY, Sumter, S. C., making a specialty of manufacturing magnetoes, was represented by Charles Kratsch of the Chicago branch, also by H. R. Van Deventer.

SWEDISH-AMERICAN TELEPHONE COMPANY, Chicago, presented a complete line of magneto telephone apparatus. Members of the company present at the convention were D. M. Patterson, superintendent; F. J. Ruhlman, traffic manager, and F. C. Lincoln, general manager. E. F. McCord, of the factory, assisted by C. C. Hermit, described the good qualities of the Swedish-American goods to a great many listeners.

TELEPHONE IMPROVEMENT COMPANY, Chicago, presented a very interesting exhibit on the Automanual and Synchronomic party line systems. The exhibit was of exceptional interest to the visitors, many of whom visited at the office of the Telephone Improvement Company, located in the Monadnock block. Managers of telephone companies desirous of getting more information regarding the new equipment called at the office where they could see it in operation. The exhibit was in charge of Garrison Babcock, general manager. Other representatives present were E. C. Lewis, N. W. North, C. H. North and J. G. Mitchell, sales engineer.

THOMPSON-LEVERING COMPANY, Philadelphia, Pa., presented an interesting feature consisting of standard switch dial test sets, Peerless plug sets, Peerless switch dial test sets, standard resistances and many other products. A blotting stone was presented to each visitor as a souvenir by W. J. Thompson.

H. R. VAN DEVENTER represented the firm of Warren and Van Deventer of Sumter, S. C., consulting engineers and patent

experts. Mr. Van Deventer also talked of his book, "Telephonology" to all those interested.

VOTE-BERGER COMPANY, La Crosse, Wis., presented the "Drive and Twist" anchor in various stages of manufacture so that the visitor could see the anchor as it appears in the process of the formation of a complete anchor. Many illustrations were given showing the old method of digging post holes for placing anchors. C. R. Pieper represented the company in the exhibit room.

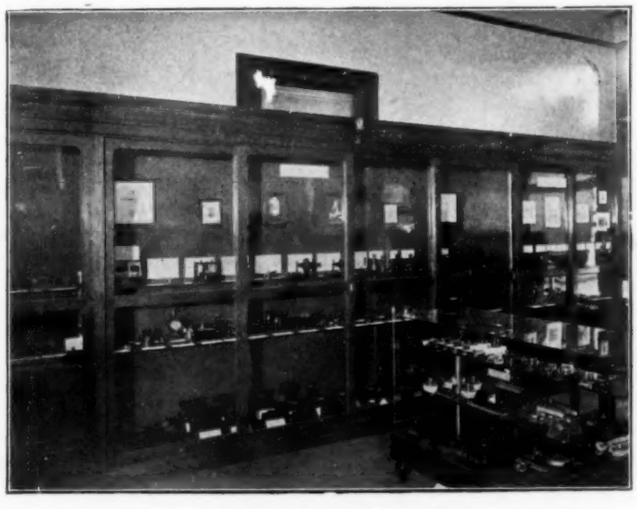
WASSON REEL COMPANY, Clinton, Ill., had on exhibition for inspection the Wasson Reel in single reel type. They also had working models of both the single and double reels. The exhibit was in conjunction with the Kellogg line specialties. B. F. Wasson explained very thoroughly the different points and good qualities of the reel.

Among other representatives of manufacturers who were present at the convention were:

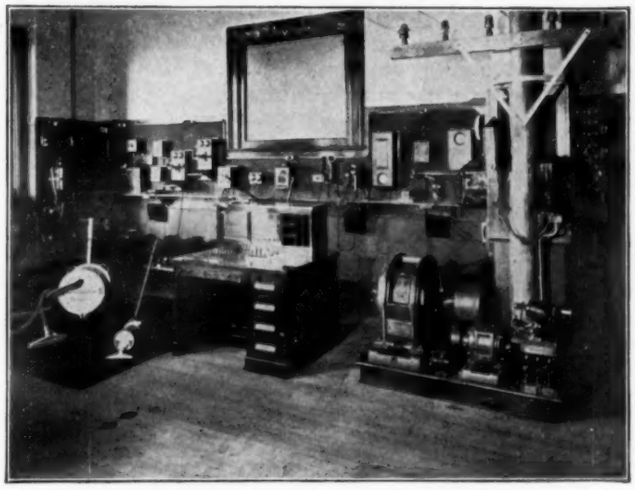
R. C. Henderson, Anderson Elec. & Mfg. Co., Chicago.
George Blackburn, Blackburn Specialty Co., Cleveland, O.
J. E. O'Neil, American Conduit Company, East Chicago, Ind.
G. S. Saunders, Electrical Contract Company.
G. A. Briggs, Chicago Telephone Supply Company, Elkhart, Ind.
David Patterson, National Pole Socket Company, Pittsburgh, Pa.
Ed. Hammond, American Electrical Wire Company, Chicago, Ill.
A. T. Naugle, Naugle Pole & Tie Company, Chicago.
A. J. Berry, United Electric Company, Marion, Ohio.
J. M. Lenz, Runzel-Lenz Electric Mfg. Co., Chicago, Ill.
Joseph Belden, Belden Mfg. Co., Chicago.
H. S. Durant, American Steel and Wire Company, Chicago
W. W. Dean, Dean Auto Devices Company, Chicago.
J. E. Norling, Monitor Auto Works, Chicago.
A. L. Stadermann, Universal Specialty Co., Terre Haute, Ind.
L. L. Hill, Page & Hill Co., Minneapolis, Minn.
Ernest Yaxley, Yaxley Mfg. Co., Chicago.
George H. Glass, Unino Electric Mfg. Co., Pekin, Ill.
B. G. Hubbell, Century Telephone Construction Company, Buffalo, N. Y.
F. C. Englehart, Chicago Solder Company, Chicago.
A. J. Cox, A. J. Cox Company, Chicago.

Permanent Exhibit of Telephone Apparatus

The telephone, though but a bit over thirty-seven years of age and therefore still young, has probably developed more in that short time than any of its humanity-helping contemporaries. In fact, writers have termed the development of the telephone a "romance of science." The story of this romance has been put forward in a most understandable and interesting way in the exhibit of historical and modern telephone apparatus and electrical supplies recently inaugurated at New York by the Western Electric Company. The exhibit is in three sections.



An Exhibit of Telephone Apparatus.



Another Part of the Exhibit.

The historical section shows the development of the telephone from its earliest stages up to the present time. The smoked glass records of sound waves made by Alexander Graham Bell, in 1874, using the human ear as a transmitting diaphragm and thus proving that diaphragms would transmit sound waves; parts of Bell's original telephone of 1876, mounted to make a complete model, and numerous instruments showing the gradual improvement in design, are exhibited to great advantage in large glass cabinets with placards giving a description of each article. Included in the historical collection, which is composed partly of apparatus loaned by the American Telephone and Telegraph Company and partly of Western Electric apparatus, are the switchboard used by Mr. Bell in opening New York-Chicago line in 1892, and the receivers and transmitters used at the opening of the New York-Denver line in 1911.

The modern apparatus section contains switchboards, magneto and central battery, each switchboard having wired to it a number of telephone sets, so that service demonstrations may be made to visitors. In this way the exhibit room serves the double purpose of an interesting and instructive exhibit and a room in which actual apparatus under actual working conditions may be shown.

In another part of the exhibit room every system of interphones is represented, and there is also a complete line of representative telephone train dispatching apparatus in operative condition. Samples of telephone apparatus and cable manufactured by the foreign houses of the company—London, Antwerp, Paris and Tokyo—are shown.

Miscellaneous telephone apparatus, such as combined jacks and signals, keys, lamps, lamp sockets, jacks, cords, plugs, and repeating coils, as well as representative pieces of telegraph apparatus, are exhibited in a large glass show case.

In other show cases are samples of all the various supply lines manufactured and distributed by the company.

The exhibit, arranged with the co-operation of the American Telephone and Telegraph Company, is in-

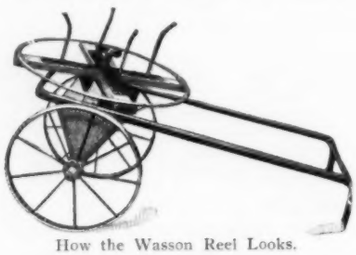
tended to be of a permanent character, and as new apparatus is placed upon the market, or new supply lines added, representative samples will be exhibited.

The exhibit room is located at the company's New York offices, No. 463 West street. It is open to visitors from 8:30 a. m. until 5:15 p. m. daily, except on Saturdays, when it will close at 1 p. m.

The Wasson Reel

The Wasson reel which was exhibited at the convention appears to be one of the most economical labor saving devices put on the market for some time. The reel is made entirely of steel and consequently it can stand the hard usage line men usually subject articles of this kind to as well as never need shelter under any kind of weather conditions. The cost of the reel is very low, considering the fact that by its use telephone companies can save the salaries of from one to two men, so that by putting the reel into use it apparently saves its cost in the first week.

It is plain that by the use of this reel only one man



How the Wasson Reel Looks.

is required to pull the wire, the reel doing its own paying out. Under the old method it was necessary to have three men to carry the reel. material and tools, two men remaining to pull the wire and one man to pay it out.

The reel has space for the carrying of tools, insulators, pins, etc., and has a brake to keep the wire from running away.

The handle of the reel forms an anchor which holds the reel firmly and when anchored in the ground it grounds any live wire which may come in contact with the wire that is being strung.

Any company desiring further particulars regarding this reel can get full information by addressing the Wasson Reel Company at Clinton, Ill.

Foreign Credits

A book of very practical value to every firm engaged in the export trade or planning to enter the foreign field has just been issued by the Bureau of Foreign and Domestic Commerce. It deals with a much-discussed subject—the credit problem—but presents it in a new way. Part of the book is devoted to an exposition by Commercial Agent Archibald J. Wolfe of credit methods and facilities in Germany, England and France, in which he shows how and by whom long terms of credit are granted in the export markets, what facilities make these extended credits possible, and the benefits or disadvantages of the system. The report also includes a review by Mr. Wolfe of present methods of financing foreign shipments from the United States and an analysis of numerous letters from American manufacturers with regard to their credit practice in export trade. Furthermore, an important series of consular reports from all parts of the world is included. In these reports American consular officers describe fully the local credit conditions. Thus the subject is considered from different angles and the reader is given an accurate idea as to what the exporters in foreign countries can and can not do in granting credit, what American exporters are doing and can do, and what the foreign importer is accustomed to expect in the matter of credit from the American exporter. Supplementing the book are examples of forms for use in financing foreign shipments and lists of banks in the United States having foreign departments and of foreign banks undertaking the collection of drafts.

The report presents the general factors and principles involved, and also gives definite data that are of immediate practical value. It presents no ready-made solution for the credit problem; rather it sets forth the facts and outlines the principles that should govern foreign credit dealings.

Copies of the book (Special Agents Series No. 62), may be obtained upon application to the Superintendent of Documents, Government Printing Office, for 30 cents a copy.

New York Commission News

The New York Public Service Commission has dismissed the complaint of the subscribers of the Interlake Telephone Company as to rental and service. The complaint asked for an order requiring a reduction from $15 to $12 per year and also asked that the number of parties on a line be reduced. The commission contends that the rates now charged by the company are not unreasonable and that operating conditions are such that a reduction of the number of subscribers on a line would not be warranted.

The commission held a hearing recently in the Metropolitan Life building, 1 Madison avenue, New York City, upon the complaints of a large number of subscribers represented by Maxwell Davidson, a lawyer of 170 Broadway. The chief complainant was Ludwig Stern of 720 Riverside drive, who lodged his charge against the New York Telephone Company two years ago. Mr. Stern alleges that he has been subjected to overcharges, and his attorney says he is prepared to corroborate his client's testimony with evidence from other telephone subscribers. Mr. Stern demands through his counsel a reduction in rates for subscribers in the Manhattan district.

Commissioner Decker, who conducted the hearing, said that hundreds of similar complaints had been received by the Public Service Commission, and the commission was trying to devise a permanent remedy.

Mr. Davidson offered records kept by Mr. Stern of the calls which the latter had from his house for the period from January 1, 1911, to the following June, and then submitted the charges made by the telephone company for the same period. The figures showed that the complaint had sent only 312 calls and had been charged by the company with 466 calls. Mr. Davidson said that the excess calls charged by the company represented numbers called for by the subscriber which were not completed, either because the number asked for was busy or did not respond.

"On an average," asserted Mr. Davidson, "all subscribers are overcharged 30 per cent, and the prevalence of this overcharging is due to the company's automatic system of recording calls. This system records not alone

completed calls, but also attempts to get calls, whether successful or not."

The commission has been notified by the New York Telephone Company that it has purchased the physical property and business of the Gowanda Bell Telephone and Telegraph Company, operating at Gowanda, N. Y., for the sum of $13,600.

Construction in Alberta, Canada

Two million dollars is the amount which the legislature is asked to appropriate for telephone extensions to be made during 1913 throughout the province of Alberta, Canada. The system, which is owned and operated by the government, represented a total capital expenditure of $5,728,288 at the close of 1912, as compared with a valuation of $3,830,035 at the end of 1911. The surplus of receipts over operating and maintenance expenses last year was $62,283, a total average profit of 12.1 per cent on the investment, as follows: Exchanges, $329,287, 12.61 per cent; toll lines, $286,862, 17.72 per cent; rural lines, $64,582, 4.71 per cent.

Estimates for 1913 prepared by W. J. Harmer, deputy minister of telephones, show plans for the expenditures of $900,000 on rural lines, an increase of $250,000 over last year; $700,000 for exchanges, or $250,000 more than in 1912, and $400,000 for long distance lines. The latter item is not so large as in 1912, for the reason that the work completed last year will meet the requirements of the province for some time. However, it is given out that preparations will be made to keep this branch of the service fully up to date.

Mr. Harmers' report shows there were in operation in the province at the close of the year, 6,689 miles of toll lines, and 9,671 miles of rural lines, connecting 7,120 rural subscribers and giving service to 14,692 exchange subscribers. Toll lines have been increased in four years since service took over Bell system, which had been operating in the province for 15 years, from 1,859 wire miles, connecting 70 offices, to 6,698 miles, connecting 234 offices, there having been as many miles constructed during each subsequent year as during all years previous to December 31, 1908.

Twenty-four hundred and ninety-four wire miles of long distance lines were constructed during 1912, the banner construction year in the history of the province. This represents an increase of 59 per cent on previous total miles in operation. On rural lines the amount of wire miles was almost doubled, there being 4,746 miles constructed, as against 4,925 in operation at the beginning of the year, an increase of 96 per cent. Thirty-three hundred and thirty-six new subscribers were added to the 3,784 rural subscribers at the beginning of 1912, and 3,840 new exchange subscribers were added to the 10,852 exchange subscribers. The increase in the number of rural subscribers was 88 per cent, and in exchange subscribers 35 per cent. At the end of the year totals stood as follows:

Long distance lines in wire miles, 6,698; rural lines in wire miles, 9,671; subscribers at rural stations, 7,120; subscribers at exchange stations, 14,692.

Thirteen town exchanges were constructed during 1912, also new central office equipment installed in 26 others, and extensions made to all existing exchanges, 17 of which were either rebuilt or considerably enlarged. The greatest growth was naturally in the large centers, Calgary, Lethbridge, Medicine Hat and Macleod. Edmonton exchange is the property of the municipality, which also owns and operates all the public utilities in the city. Provisions were made in Calgary for the installation of 4,200 additional lines; Lethbridge exchange was increased by 500 lines, while Medicine Hat and Macleod exchanges increased 100 per cent.

Telephones in North China

Consul-General Amos P. Wilder, Shanghai, China, says the telephone service at Changchow is a very small affair for the convenience of the officials and has not yet been taken up by the merchants. The matter of a telephone system is under consideration, although no plans have yet been made.

The telephone service at Soochow was a joint enterprise on the part of the merchants and officials under the old regime, the latter doing the managing while the former furnished the capital. Both sides shared in the profit according to shares. There are in operation something over 300 telephones.

The electric-light plant at Ningpo has been in operation some three or four years. It is said that the company is entirely owned and operated by Chinese, who claim to have a service of about 1,700 lights. The same company is said to be contemplating the establishment of a telephone service, but nothing has been done so far to bring matters to an accomplished fact.

Hangchow has both a telephone and an electric light service. The telephone service has about 500 subscribers and is said to pay expenses.

From the above it will be seen that the principal cities of this district are practically all equipped with telephone service, although the concensus of opinion seems to be that a great deal could be done to make existing service more efficient.

There can be no doubt that there will be a great deal of progress in the telephone business in China in the near future, for the Chinese are quickly learning to appreciate the telephone as a modern necessity. Just at present money is very scarce among the Chinese, a condition which has to be taken into consideration when speaking of establishing public service corporations in the interior.

Many plans for such service are being discussed with foreign firms in Shanghai who are engaged in such enterprises, but it is stated that practically all of these proposals carry with them applications for a loan with which to finance the business.

The Telephone in the Wilderness

In writing in the *Western Electric News* of his experiences during a recent vacation trip in the heart of the snow-clad Rockies, W. P. Sidley, vice-president and general counsel of the Western Electric Company, gives a striking illustration of one of the many phases of usefulness of the government's forest service telephones. After describing the beginnings of the trip, Mr. Sidley goes on to say:

"At Schlemm's—the guide's—suggestion we struck out for Edelmann's Pass, where, at an altitude of 11,500 feet we crossed into the canyon of Medicine Lodge Creek on the west slope, and thence directly south through heavy timber to Paint Rock Lakes.

"While we were at Paint Rock Lakes, a forest ranger rode into camp one afternoon with a message sent me that same morning from Chicago, stating that

my law partner, Arthur D. Wheeler, had died suddenly the previous evening. I was too stunned by the news at the time to inquire how the message had reached me in the heart of the Big Horns with such marvelous promptness, but I had the story the following day from the ranger. To appreciate this remarkable performance, it should be remembered that we had left our last point of communication with the outer world, viz.: Horton's Ranch on the east slope of the mountains, ten days before, had traveled north and west over the crest, and were then camped in the wildest part of the west slope some five days distant from East Tensleep Lakes, our next point of communication with Horton, where he was to bring us fresh supplies on September 4. Under ordinary circumstances it would have taken from three days to a week to have located our party and delivered this message from the ranch. An extraordinary incident, however, brought about its delivery within a few hours after it was filed at Chicago.

"The Paint Rock region of the Big Horns lie within the forest range territory assigned by the government to Mr. O. A. Emery. This district is some fifty miles north and south, and about twelve miles in width, with its western edge overlooking the Big Horn basin. On the morning of August 30, the ranger was out on a high rim of rock near his home examining the surrounding country through a powerful field glass in search of possible forest fires, when his eye caught sight of a sorrel horse feeding on the shore of Paint Rock Lake six miles away. He watched the horse closely and concluded from the manner in which it stood after feeding, that it was not one of the range horses that graze in a semi-wild state over this region, but belonged to some party of campers or "tourists," as they are called in that country.

"Almost immediately upon returning to his cabin, he received a call on his telephone asking him if he knew anything of my whereabouts in his district and stating that an urgent message was awaiting delivery. My message, which was then given him, had been telegraphed to me at Buffalo, Wyo., telephoned to Horton's Ranch, relayed from there in the same manner to Sheridan, from Sheridan across the Big Horns to Basin City, from there to Hyattville at the foot of the west slope and thence up the mountains to the ranger's cabin, where it was received over the Western Electric equipment that is used in this government service. Mr. Emery at once replied that he felt sure he knew just where to reach me, mounted his horse and started for Paint Rock Lakes and within two hours placed the message in my hands."

The Simplex Wiring Computer

Electrical engineers and wiremen will appreciate the wiring computer which the Simplex Wire and Cable Company will send on request. The computer is mounted on stiff, thick celluloid of a convenient pocket size. It consists of a circular slide rule particularly adapted for wiring calculations.

By a single setting of the computer the following results may be obtained: The size B. & S. gauge of a wire is readily determined by setting the disc to correspond to a given distance of distribution for a desired voltage drop and the current which the wire is to carry; or given the size B. & S. gauge, the current to be carried, and the distance of transmission. The resulting voltage drop may be read directly upon the computer. In like manner, the current may be found at one setting for a desired voltage drop with a definite sized wire and distance of transmission. Finally, the distance to correspond to specific conditions of voltage drop; the current and size of wire may be found by a single setting of the disc. The setting of the disc is very simple and directions for attaining those four different results are given explicitly at the foot of the card. Much laborious figuring is avoided by its use. On the reverse side of the pocket card are handy tables of wiring data and table of decimal equivalents of fractions of an inch.

Anyone who desires one of these wiring computers may receive one by communicating with the Simplex Wire and Cable Company, 201 Devonshire street, Boston.

Western Electric Business in 1912

On account of the world-wide ramifications of the Western Electric Company the final figures as to the results of the year 1912 will not be completed much before April 1. The sales will be between 71 and 72 millions, which is slightly more than in 1906, the previous largest year in the companys' business. The increase has been in American sales outside of the Bell system, which have increased about 100 per cent over 1906, and in European sales, which were the largest in the company's history. The results have been accomplished by an energetic selling campaign in the face of increased and increasing competition.

The company is now selling to upwards of 30,000 customers in the United States alone.

It is expected that the profits will be satisfactory considering the wider distribution and increased competition.

The board of directors has established two additional vice-presidents in the company's organization, and has appointed to these newly created positions Gerard Swope, general sales manager, and A. L. Salt, general purchasing agent.

Kentucky Commission News

The Campbellsville Home Telephone Company filed a petition with the Kentucky State Railroad Commission to require the Cumberland Telephone Company operating in that city to give a connection to the petitioning company. This connection is provided for by an act of the Legislature last year, which is also a mandate of the constitution. The Cumberland Telephone Company objects on the grounds that connection has been granted to the Columbia Telephone Company, which is a competing line with the Campbellsville Telephone Company. Arguments will be heard by the commission on the petition March 5.

A Clever Souvenir

The National Pole Company of Escanaba, Mich., is sending out a very clever daily reminder pad. The spring clip of brass is fashioned after the shape of a minature pole, which bears the inscription "National Pole Company."

There is not the slightest doubt that every telephone company that gets one of these pads will keep it in plain sight on the executive desk. It is a lasting advertising novelty.

Texas, Land of Telephones

A census on the telephone and telegraph industry in Texas compiled by the Texas Commercial Secretaries and Business Mens' Association shows that there are 498 independent connecting telephone companies, 30 independent non-connecting telephone companies and four telegraph companies operating in Texas and that there are approximately 300,000 telephones in use.

The Southwestern Telegraph and Telephone Company is the largest single telephone company doing business in Texas. There are approximately 30 independent telephone companies in the state that have no connection with the system, among these the Automatic Telephone Company that operates more than 8,000 telephones in the city of Dallas.

It it estimated that there are 600 exchanges in the state of Texas, of which the Southwestern Company operates and owns 269. There are 559 of the total exchanges in the state operated by the Southwestern and connecting line companies.

The total number of miles of wire, open and cable, used for toll business in Texas is approximately 230,000 wire miles. Of this amount the Southwestern Company operates 228,000 wire miles.

The longest telephone line owned by one company in any one state in the Union is that from Brownsville to Dalhart, operated by the Southwestern Telephone Company, which is a distance in wire miles equal to that between New York City and Omaha.

The telephone is going ahead of the railroad and is one of the greatest factors in the state that is aiding in opening up new territory and releasing the wealth of countless square miles of heretofore waste land. Isolation, the greatest handicap upon Texas, is being rapidly eliminated by the telegraph and telephone. In the cities and towns of the state the telephone has become a business necessity, while it has brought increased prosperity to the farmer and put him into closer touch with his market.

The establishment of the parcel post has increased the absolute necessity for a telephone on each farm that is situated any place near a market for its products as the farmer can now take his customer's order in the city over the telephone and deliver his product through the parcel post directly to the consumer.

While there are many small exchanges in the rural districts of the state known as farmers' mutual lines that operate independently and have no connection with the Southwestern Telephone Company and the connecting lines, the system connects every city and town with practically every community in every section of the state.

The telephones reach twice as many points in Texas as there are postoffices and the telephone was shown to have reached all but three out of the 249 county seats of Texas during the last July primary. It is estimated that more than 27,000 farm houses have telephones and that the number of rural telephones are increasing in the state at the rate of 880 per month.

"Soldering Kinks," is the name of a wall card, 18 x24 inches being sent out by the M. W. Dunton Company, Providence, R. I., manufacturers of "Nokorode" soldering salts and other specialties. This card, hung over the work bench, is bound to result in better workmanship, for it is full of valuable hints to the user of solder.

Doctor to Guard Health of Telephone Employees

Marking a new era in the relations of employer and employee, the American Telephone and Telegraph Company, the Western Electric Company, which are allied corporations, have completed arrangements for a system of medical supervision and sanitary methods designed to preserve the health of their two hundred thousand employees. Dr. Alvah H. Doty, formerly health officer of the Port of New York, has been appointed medical director of the Employees' Benefit Fund Committee, in charge of the pension and sick benefit system. Dr. Doty's department will have supervision over ill and injured employees and obtain medical and surgical aid for all needing such. Arrangements will be made with hospitals throughout the country for the prompt reception of employees who may decide upon this form of treatment. Theodore N. Vail, president of the American Telephone and Telegraph Company, and the Western Union Telegraph Company, in speaking of the proposed system, said: "The new medical department will have a wide range of activities. In addition to the usual functions of such a department it will devise and carry out various methods for health protection known as 'preventive measures.'

"So far as practicable we shall seek to detect diseases in their early stages, particularly those that are communicable, notably tuberculosis, and arrange for the care and treatment of the afflicted. This not only offers a better chance for the patient's recovery, but also protects other employees. Preventive measures also include sanitary conditions in offices and workshops, such as adequate lighting, pure air and water, proper plumbing and the discontinuance of articles in general use believed to be agents of infection. Employes will be instructed in hygiene and sanitation, and we hope that the knowledge thus gained will extend to the home and to the public generally.

"The various measures outlined will be carried out without undue haste. This undertaking, in accord with modern sanitation, will provide mutual protection to employees and employer and constitute an economical factor in the interest of both."

Rules of Highest Paid Operator

Miss Minnie Warner is said to be the highest paid switchboard operator in Chicago. She is twenty-five years old and is distinguished for a "velvet voice" and pleasing personality. Her success is doubtless as much due to her good sense as her personal charms, as the following professional observations and rules credited to her would seem to indicate. She says:

"The bigger a man is the more polite he is likely to be to girls in my position. I have found the most influential men in the business to be the most patient and considerate of my feelings. A gentleman, if he should so far forget himself as to say things in hot temper, will apologize later."

Here are a few switchboard aphorisms out of Miss Warner's experience:

"Don't argue. The angry man will argue himself out of it if you let him alone.

"Don't snap. Remember that a 'soft answer turneth away wrath.'

"Don't be mechanical. Make every man on the wire believe that your softest tones are for him alone.

"Don't be indifferent. Make every kicker believe you are heart-broken because the line is busy.

"Don't flirt. Let the other flirt all he likes, but you just laugh and attend to business.

"Don't be a prude. Don't hear what you are not supposed to hear, or what is not fit for you to hear.

"Don't get tired. No matter how tired you are, pretend you are as fresh as the dawn and try to look it.

"I have learned that men are far more amenable to reason than women are. Some women are exceedingly unreasonable at all times, and no matter what their experience of the world they never seem to find out the simplest rules of the game. It doesn't take a man long to realize that he can go further with kind words than with harsh ones, especially with telephone operators."

Nebraska Commission News

The Nebraska state railway commission has authorized the Farmers' Telephone Company of Alexandria to issue stock to the amount of $1,300 for the purchase of a telephone central exchange office. The commission has granted leave to the Steele City Telephone Company to make a rate of 50 cents a month in addition to the regular rate of $1 a month, for the use of a telephone by two people, also a rate of 10 cents for night and out-of-hours calls.

Lecture on Wire and Cable

W. I. Middleton, electrical engineer of the Simplex Wire and Cable Company, delivered at the Franklin Union on January 29, a lecture on the manufacture of insulated wires and cables. Illustrated by lantern slides, the lecture covered the entire field of cable manufacture from the first installations of a bare conductor in a trough of resinous material to the complicated designs developed to meet present day requirements.

The following committee on entertainment has been appointed by A. C. Einstein, president of the League of Electrical Interests, Jovian Chapter: W. J. Hiss, general manager, Bell Telephone Company of Missouri; Burt Crouch, sales department, Union Electric Light & Power Company; William A. Yandell, engineering department of the Union Electric Light & Power Company; William Gallaher, superintendent electric department, Laclede Gas Light Company; T. T. Richards of the Wagner Electric and Manufacturing Company and Claude L. Matthews of W. N. Matthews & Brother, as chairman.

Brevities of the Business

PERSONAL NOTES.

E. C. Lewis, whose friends in the independent telephone game throughout the central states are legion, has alighted from a flight of investigation of the Automanual system and settled down in the general office of the Telephone Improvement Company, in the Monadnock building, Chicago. It was in 1893 that Mr. Lewis launched into the telephone business. For a while he was content with building exchanges in Iowa and doing big things in his connection with the construction departments of the Independent systems at St. Paul, Minneapolis and Detroit. In 1902, he transferred his abilities to the Stromberg-Carlson Telephone Manufacturing Company. Here he stayed for some time, selling telephone equipments throughout Ohio and later being connected with the Chicago sales office. Then he got tired of the whole thing and thought he'd quit. The automobile business appealed to him so strongly that he tendered his resignation Jan. 2, 1913, and thought it was the climax to his eleven years in the telephone industry. But he reckoned without the Telephone Improvement Company of Chicago which made him an enticing offer and he condescended to look the matter over. His method of "looking it over" meant a ten days' examination of the North Electric Company's new factory at Galion, O., and an inspection of the Automanual exchanges at Ashtabula, Conneaut, Warren, O., also at Greensburg, Ind., and Galesburg, Ill. When he returned to Chicago he was filled with enthusiasm on the subject of the Automanual system and—but just drop in sometime at the Improvement Company's offices in the Monadnock block and call on Mr. Lewis, yourself.

R. L. Thayer, Chicago representative of the Oshkosh Manufacturing Company, has been placed in charge of the new branch warehouse recently opened in Chicago at 424 South Clinton street, which will carry a complete line of Oshkosh tools. The company has just sold a carload of its serviceable kalkeen pins to the western trade, where—and also in Canada—these pins have found exceptional favor.

W. N. Matthews & Brother, St. Louis, announce that John L. Fay has again associated himself with them as sales engineer with headquarters in St. Louis. Mr. Fay left W. N. Matthews & Brother in April, 1912, to take the position of superintendent of wire with the Milwaukee Railway & Light Company, which position he accepted at the request of S. B. Way, vice-president and assistant general manager, for whom he formerly worked in the same capacity, when Mr. Fay was chief engineer of the Union Electric Light & Power Company of St. Louis. Mr. Fay is an expert on overhead light and power distribution and all the devices that appertain thereto. W. N. Matthews & Brother state that they will be very glad to have any of their customers take advantage of this knowledge and write him for information regarding problems which may confront them.

Thomas Brown, who has been district commercial manager of the Galesburg district of the Central Union Telephone Company, with headquarters in Galesburg for a number of years, has been transferred to the Kankakee district. F. W. Kelly, manager of the local exchange, has been made district commercial manager. Mr. Kelly will continue to make his headquarters in Galesburg, and will manage the local office as in the past.

J. E. Thomas has been given charge of the commercial department of the Bloomington and other offices in the district for the Central Union Telephone Company.

F. L. Woodruff, formerly division commercial superintendent of the Southern Bell Telephone and Telegraph Company, at Montgomery, has been transferred to Atlanta as special agent in the general commercial office. Keith Conway comes with Mr. Woodruff from the Montgomery office. C. D. Sands, formerly in the commercial superintendent's office at Montgomery, has been transferred to the division commercial superintendent's office in Atlanta, and J. C. Thomson, formerly division traffic manager at Birmingham, has been transferred to Atlanta as division traffic superintendent.

J. H. Richardson, manager of the Sun Telephone Company, at Lexington, Tenn., has resigned his position to enter the mercantile business at Whiteville, his former home. He will be succeeded by Joe A. Carpenter of Corinth, Miss.

W. N. Matthews & Brother wish to announce that they have accepted the resignation of Benjamin C. Chase as their representative in Los Angeles, and have turned over this territory

to Louis E. Sperry, who represents them in San Francisco. This now gives Mr. Sperry the entire state of California as a representative of this well known firm.

Miss Anna Halbin, who for the past eleven years has been with telephone exchange at Florence, Colo., has resigned her position and gone to Pasadena, Cal., to reside. For the past two years she has filled the position as the manager of the Florence exchange. Her place will be taken by G. W. French of Denver.

R. Edwin Robinson, traffic chief of the Southern Bell Telephone Company at Richmond, Va., for the past three years, has gone to Atlanta for the purpose of entering on the duties of chief of traffic of the company in that city. He is succeeded here by John Orth, of Norfolk.

J. G. Thomas, chief clerk of the Vicksburg office for the Cumberland Telegraph and Telephone Company, promoted to manager at Monroe, La., and to be submanager of the territory adjacent to Monroe, under Manager A. D. Johnson, of the Vicksburg office. Mr. Polard, of Winnfield, La., succeeds Mr. Thomas at Vicksburg.

Walter J. Jones, district traffic chief of the Nebraska Telephone Company, of the Norfolk district, has been promoted to chief of the Grand Island district. Elmer K. Kemp, formerly chief clerk to the general traffic superintendent at Omaha, has been promoted to the position left vacant by Mr. Jones.

A. M. Murfin has moved his office from Grandview to the R. L. Allen building on Mayhew street, at Sunnyside, Wash. Hereafter this will be the headquarters of the Yakima Valley Telephone Company.

L. P. Shoop, who recently resigned his position with the Central Union Telephone Company, at Galesburg, Ill., has gone to Chicago, where he has assumed his new duties as manager of the order department of the Electric Service Supplies Company, located on South Dearborn street.

L. R. Medlar, for some time with the Inter-State Telephone Company at Prophetstown, Ill., has gone with the Illinois Utilities Company. Mr. Medlar is succeeded by Glenn Stanners, of Morrison, an experienced person in the business, who for some time has been trouble man in Morrison.

Manager R. M. Quimby, of the Kewanee office of the Central Union Telephone Company, will hereafter report all commercial matters to F. W. Kelly, district commercial manager.

E. L. Mitchell of Galesburg, has been made district chief of the plant department of the Central Union Telephone Company, with headquarters in Moline, and J. H. Barlow, of Galesburg, will be traffic chief of the district, with headquarters at Moline.

William Sanders resigned his position at Houston, Tex., as manager of the Willis Telephone Exchange. He is followed by R. E. Worsham, of Huntsville, who came to take his place.

Carl Austin, of Norfolk, Neb., has moved to Allen, where he has accepted the management of the Nebraska Telephone Company's office.

Martin Enright, who has been manager for the Inter-State Company at Lockport, Ill., has been transferred to the Aurora office. He will be succeeded by E. L. Pensington, of Kentucky.

P. B. Cumings has been elected manager of the Webster Telephone Company of Dodge county, Nebraska.

The resignation of Lloyd M. Stevens, as manager of the Southwestern Telegraph and Telephone Company, at Victoria, Tex., took effect February 1.

Walter Hintze has taken the management in Prairie Du Chien, Wis., of the Union Telephone Company's lines, taking the place of J. A. Murray, who has resigned to take a traveling position and will live in Madison.

O. C. Walker, a former resident of Shelbyville, Tenn., and who has for many years been in the employ of the Cumberland Telephone Company, has been stationed at Shelbyville as manager for that company.

F. W. Atkins, of LaSalle, Ill., manager of the local Central Union Telephone Exchange, has received word of his appointment as district commercial manager of the company in this part of the state, his headquarters being in LaSalle. This will give Mr. Atkins jurisdiction over the business activities of the telephone systems of four counties, LaSalle, Bureau, Putnam and Livingston.

W. J. Denver, aged seventy-two years, an old-time telegrapher, a director and assistant general manager of the New England Telephone and Telegraph Company, at Boston, Mass., died in Florence, Mass., January 18. Deceased was born in Springfield, Mass., August 18, 1841, and began his telegraph career in 1857. In 1878-79 he was actively engaged in the telephone business on behalf of the Western Union Telegraph Company, and was afterwards manager of the Springfield, Mass., office of the same company. In 1885 he was appointed assistant general manager of the New England Telephone and Telegraph Company, which position he retained up to the time of his death. He was a member of the Old-Time Telegraphers and Historical Association, the Telephone Pioneers of America, and several other organizations and clubs.

C. A. McMillen was elected assistant secretary of the Decatur Home Telephone Company, at Decatur, Ill., in the semi-annual meeting of the board of directors, held recently in the telephone company building in the 200 block, North Main street.

Clark Northrop, who has been the efficient manager of the telephone office at Cody, Wyo., for the past year, has gone to Red Lodge, where he has received his appointment as manager of the telephone service in that city. Carl Milburn, of Miles City, has taken charge of the office at Cody vacated by Mr. Northrop. Mr. Milburn is an experienced man in the telephone service, and will undoubtedly fill his position successfully.

A. J. Beverlin, commercial manager of the Central Union Telephone Company plants at Moline, East Moline and Rock Island, will be commercial agent for the new district, known as that of Rock Island. This position is considered a promotion for Mr. Beverlin and shows recognition of his work in this community. For ten years Mr. Beverlin has been manager of the Rock Island office and for the past twenty-three years he has been active in the employ of the Central Union Telephone Company. While Mr. Beverlin will make his headquarters in Rock Island, two chiefs will make their headquarters in Moline.

Francis Blake, aged sixty-four years, inventor of the telephone transmitter known by his name, died in Weston, Mass., January 20. He was a director of the American Telephone and Telegraph Company, and was elected an honorary member of the Telephone Pioneers of America, at the second annual convention of that association in New York, November 14, 1912. He was born in Needham, Mass., on Christmas Day, 1850. For nearly fifteen years he served on the United States coast survey. He devoted all his leisure to experimental physics, and his invention of the Blake transmitter in 1878 played a very important part in the development of telephony, and gave him a prominent place among inventors throughout the world. Later he patented many other electrical devices.

Palmer Rolander of the Independent Telephone Company of Princeton, Ill., has been transferred to Wyanet, where he assumed charge of the company's business at that point.

J. A. Williams has resigned his position as manager of the Bell Telephone Company at Culkoka, Tenn., and has accepted a position with the L. & N. Railroad. Joe Tidwell has the position vacated by Mr. Williams.

Charles C. Deering, formerly manager of the Boone County Telephone Company in Boone, Ia., and an old Boone boy, has been made president of the Independent Telephone Clearing House, with headquarters in Des Moines. Since leaving Boone Mr. Deering was manager of the Nebraska Telephone Company, with headquarters in Omaha.

Fred Beckman, for the past thirteen years manager of the Bloomington, Ill., office of the Central Union Telephone Company, has been placed in charge of the plants owned by the company in the district of McLean and adjoining counties. Since 1900 Mr. Beckman has been commercial and plant chief of the local office, everything pertaining to Bell telephone affairs in Bloomington being in his charge. The promotion relieves him of the commercial part of the business and gives him increased territory to care for the construction and operation of telephone plants in cities and towns in McLean and Livingston, Ford and Logan and other adjoining counties. He will continue to make Bloomington his headquarters and his home.

E. H. Kellam, division commercial superintendent of the Missouri & Kansas Telephone Company at Topeka, Kan., has resigned his position, effective March 1, to give his attention to personal affairs. He will be succeeded by S. J. Bear, who has been acting in the capacity of tax commissioner for the telephone company. Under Mr. Kellam's management the Bell telephone exchange has developed from one with about fifteen hundred telephones to one with over 10,000. A. J. Mackey continues as manager of the Topeka and Grantville exchanges.

ELECTIONS.

At the annual meeting of the Lindsey Telephone Company at Marshfield, Wis., the same officers and directors and the superintendent that were in before were re-elected. An addition to the by-laws was voted upon and carried to charge a toll of 20 cents upon all night messages (excepting sickness, death or fire calls), said toll to be paid to the central operator. An assessment of $6 on each member was also levied, to be paid before April 1, 1913. Night calls are figured from 9 o'clock p. m. to 5 o'clock a. m.

The Otter Creek Telephone Company held its annual meeting at Otter Creek. James McCabe was elected president of the company for the ensuing year to succeed M. J. Nelson, and C. G. Watters was re-elected secretary and treasurer.

Pursuant to a call of the president of the Union Telephone Company of Sheridan, Wyo., the stockholders met at their office to look after the affairs of the company and to consider any other business that has or might come before the company. The following officers were elected for one year: J. W. Callaway, La Crosse, Wis., president; J. P. Zeman, Prairie du Chien, vice-president; C. W. Sherman, Reedsburg, Wis., secretary and treasurer; J. A. Murray, Prairie du Chien, Wis., superintendent and general manager.

Officers for the Laurel Telephone Company of Borden, Ky., have been elected, as follows: Perry Spurgeon, president; Bert Kelly, vice-president; James H. Todd, secretary and treasurer; W. R. Jackson, Samuel Hagast, D. M. Dow, John Coats, J. H. Todd, Bert Kelly and Perry Spurgeon, directors.

The Utica Home Telephone Company of Utica, N. Y., elected a president, E. B. Odell; vice-president, Charles H. Poole; treasurer, W. I. Taber; secretary, S. C. Ormsbee. The directors are: F. C. Stevens, Frank L. Wood, W. W. Nicholson, S. C. Ormsbee, Henry F. Miller, Charles H. Poole, W. I. Taber and F. C. Hazard. F. C. Hazard was elected to succeed the late Frederick G. Fincke.

The annual meeting of the stockholders of the Story County Independent Telephone Company was held at the offices of the company in Nevada, Ia., and a board of directors elected for the ensuing year. All old members of the board were re-elected, as follows: F. A. Smith, J. A. King, L. E. White, R. A. Frazier, M. C. Allen and E. M. McCall, of Nevada; P. Joor, of Maxwell; Jacob Erickson, of Roland; and Ben Johnson, of Cambridge. There was a good representation of the stock present at the meeting. At the meeting of the directors M. C. Allen was elected president; D. R. Speiker, treasurer; and F. M. Boardman, secretary. Mr. Boardman, who has been active manager of the independent telephone service in the county since it started, will continue as manager of the Story County Independent, consisting of the exchanges at Nevada, Roland, Maxwell and Cambridge, besides a large amount of toll line.

At the meeting of the Coon Creek Telephone Company, held at Blairstown, Ia., the following officers were elected: F. Bolger, president; F. Heck, secretary and treasurer; Dolge, Beckler, Shaull, Crandall and Groff, directors.

The board of directors of the Eaton Telephone Company of Dayton, O., elected C. P. Brooke, Jr., president. Other officers chosen are: C. B. Cokefair, vice-president; L. D. Lesh, secretary; Elam Fisher, treasurer.

At a meeting of the board of directors of the San Marcos Telephone Company of San Marcos, Tex., the following officials were re-elected: G. G. Johnson, president; G. W. Donalson, vice-president; Merton Swift, secretary-treasurer and manager. In addition to the above named, other members of the directorate are: I. W. Wood and Dudley C. Johnson. Two thousand dollars was allowed for additional cables in west end. The board also considered a proposition to purchase an automobile for the use of the company.

O. P. Morgan, M. H. Honnon and John Siebens were elected as directors at the meeting of the Ivesdale, Ill., Farmers Mutual Telephone Company. The retiring directors were M. Crimgan and Lewis Smith, O. P. Morgan being re-elected.

At the annual stockholders' meeting of the Union Telephone Company at Berne, Ind., a 6 per cent dividend was declared and the following officers were elected: President, William Baumgartner; secretary and manager, Frank Hisey. The following directors were elected: William Baumgartner, F. C. Foreman, Frank Hisey, F. G. Eichenberger, J. W. Baumgartner.

The annual meeting of the Aitkin-Deerwood Telephone Company at Aitkin, Minn., was held and officers were elected as follows: President, C. P. DeLaittre; vice-president and secretary, H. J. Hager; treasurer, Herman Moork. Edwin Wasserzieher was added to the board of directors and Herman Moork was unanimously re-elected to the position of manager. As the company has been making costly extensions to its plant the past year, no dividend was declared.

At the annual meeting of the stockholders of the Cropsey Telephone Company of Bloomington, Ill., two directors were elected for three years, William Mundell and Frank Thomas. The directors met and elected the following officers: C. L. Fitzgerald, president; John Koehl, vice-president; C. H. Pratt, secretary and treasurer. The lines will be considerably improved by putting up a number of miles of new wire in the spring.

The annual meeting of the Lake View Telephone Company was held at Sac City, Ia. The following officers were elected for the year: A. Armstrong, president; W. M. Dean, vice-president; V. R. Anson, secretary; C. P. Therkelsen, treasurer; C. T. Waits, P. Smith and E. E. Speaker, executive committee.

At the annual meeting of the Home Telephone Company held at Rockford, Ill., the following officers were elected: T. M. Ellis, president; R. S. Chapman, vice-president; John F. Camlin, secretary; W. F. Woodruff, treasurer; James H. Corcoran, general manager. All the old board of directors were re-elected. The officials are the former list with the exception of Treasurer Woodruff in place of F. F. Wormwood.

The stockholders of the South Telephone Company held their annual election of officers at Shenandoah, Ia. The old officers were all re-elected.

The annual meeting of the stockholders of the Mosel and Centerville Telephone Company was held at North Mosel, Wis., all the members of the board of directors being re-elected. The following are the names of the officers of the company: Ernest Klessig, president; William Strauss, vice-president; Herman Bohne, treasurer; Otto Wippermann, secretary; Joe Silbernagel, director.

The Rothsay Telephone Company held its annual meeting at Fergus Falls, Minn. A dividend of 12 per cent was declared, $200 placed in the repair and improvement fund, besides leaving a nice balance of $329.38 in the treasury. In the face of the splendid showing of their past year's administration, the old directors and officers were almost unanimously re-elected, and are as follows: President, A. K. Peterson; vice-president, Charles Nelson; secretary and treasurer, T. K. Brye; C. C. Holter, John Larson, H. S. Hammer, O. G. Nordmarken.

At the annual meeting of the directors of the Dakota Central Telephone Company in Aberdeen, S. D., the following officers were re-elected for the ensuing year: President, J. L. W. Zietlow; vice-president, C. N. Herreid; secretary and treasurer, W. G. Bickelhaupt; general superintendent, J. F. Zietlow.

The Blue Earth County Telephone Company of Lake Crystal, Minn., held its annual meeting and elected the following officers for the ensuing year: E. A. Upson, president; D. E. Bowen, secretary; D. E. Crane, treasurer. The directors are John F. Jones and J. H. Jones. The company was organized and commenced the service fourteen years ago and has about 5,000 telephones in service. Its line is from Lake Crystal to New Ulm.

Directors of the Valley Telephone Company held a meeting at its office in Saginaw, Mich., and elected the officers and executive committee for the ensuing year, as follows: President, J. C. McCabe, Bay City; vice-president, Charles W. Liken, Sebewaing; secretary, C. O. Trask, Saginaw; treasurer, H. F. Paddock, Saginaw; executive committee, Messrs. McCabe, Trask and Paddock.

The Orchard Homes Telephone Company of Dundee, Ore., has elected the following officers: President, Roe Robinson; vice-president, Miss Rose Young; secretary, E. D. Greer; treasurer, W. S. Allan. These officers, with H. B. Powell, constitute the board of directors.

The annual meeting of the Altona-Nekoma Telephone Company was held in Antona, Ill. The usual routine business was transacted. C. E. Johnson was elected director for three years. The following officers were elected for the ensuing year: President, F. D. Anderson; vice-president, Hugh Simpson; secretary, A. C. Barnes; treasurer, Ed Lundeen.

Germania, Ark., has just completed a new rural telephone line which connects Otter, Hurricane and Banner townships, Saline county. The officers of the company are: T. L. Kerr, president; M. T. Carpenter, vice-president; Charles A. Butler, secretary. They now want a long-distance connection with Little Rock, which would require only about 200 feet of wire.

At the annual meeting of the stockholders of the Ellendale Farmers' Telephone Company, held recently, C. R. Sullivan was elected president to succeed M. J. Dunnigan, who had moved to Owatonna, Minn., where he is making his home. Nels Norby was re-elected secretary and John Ellingson treasurer and the rest of the board of directors remains unchanged. The company is in excellent condition.

A special meeting of the Central Illinois Telephone and Telegraph Company was held recently for the purpose of electing a director to fill the unexpired term of Hon E. D. Blinn, deceased. John S. Haller was named for the place and no other changes were made.

At a called meeting of the stockholders of the Chenoa Telephone Company at Chenoa, Ill., E. C. Chapman was elected a director in the place of Frank Rhoda, who was recently elected but refused to serve. The proposition to levy an assessment of $15 besides the annual assessment of $10 for building purposes was defeated by a vote of 35 for and 36 against.

At the annual meeting of the Mutual Telephone Company

of the township at South English, Ia., C. G. Clark was re-elected president of the organization and several important decisions were reached, one of them being to continue switch service on Sunday.

The annual meeting of the Clearwater Farmers' Telephone Company was held at Plummer, Minn., and officers were elected for the year as follows: President, Charles Sall; vice-president, H. J. Enderle; secretary-treasurer, P. S. Medchill; directors, Sam Lovaas, Tom Melby, H. J. Enderle and T. T. Slettvedt. The report of the company covering the last year was read and showed it to be in a sound condition.

Stockholders of the Cumberland Telephone and Telegraph Company at Louisville, Ky., re-elected all of the old directors and added J. M. B. Hoxsey, of Atlanta, and E. J. Hall, of New York, to the body. Theodore N. Vail, president of the American Telephone and Telegraph Company, was re-elected a director. The following officers were re-elected: W. T. Gentry, president; J. Epps Brown, vice-president; Leland Hume, vice-president; T. D. Webb, treasurer; C. J. Holdhitch, general auditor; Addison Maupin, assistant treasurer and secretary.

The annual meeting of the stockholders of the Home and Independent Telephone companies were held in Wilmington, Ky., and the present board of directors were re-elected, as follows: Home Company—Directors: E. H. Cady, R. B. Crane, E. J. Marshall, Toledo; J. D. Powers, D. W. Johnson, Sam P. Jones, James B. Brown, Louisville; J. M. Lassing, Frankfort; C. D. Knoefel, New Albany, Ind.; J. C. Gray, Wilmington, Del. Officers: E. H. Cady, Toledo, president; J. M. Lassing, Frankfort, vice-president; J. D. Powers, Louisville, treasurer and chairman board of directors; Darwin W. Johnson, secretary; S. M. Heller, assistant treasurer. The officers and directors of the Independent Company are: Officers: J. D. Powers, president; R. B. Crane, vice-president; S. M. Heller, secretary and treasurer. Directors: J. D. Powers, Louisville; E. H. Cady, Toledo; J. M. Lassing, Frankfort; R. B. Crane, Toledo; J. C. Gray, Wilmington, Del. Practically all of the stock of the Louisville Home Telephone Company is owned by the Central Home Telephone Company and all of the stock of the Independent Company is owned by the Louisville Home Telephone Company.

At the annual meeting of the directors of the Rochester Telephone Company no change was made in the officers, the following being re-elected: President, George R. Fuller; vice-president, George F. Roth; secretary, Fred C. Goodwin; treasurer, Charles M. Beattie; assistant secretary and treasurer, George C. Fuller; chief clerk, William T. Farrell.

Major John H. Leathers was elected a director of the Louisville Home Telephone Company, to succeed Sam P. Jones, at the annual meeting of the stockholders held at Wilmington, Del. No other change was made. The board is as follows: E. H. Cady, R. B. Crane, E. J. Marshall, Toledo; J. D. Powers, D. W. Johnson, Major John H. Leathers, James B. Brown, Louisville; J. M. Lassing, Frankfort; C. D. Knoefel, New Albany; J. C. Gray, Wilmington, Del.

The Frankfort Hill and Litchfield Mutual Telephone Association held its annual meeting at Frankfort Hill. Frank Sass was elected president, George Sass secretary and treasurer, and George Hayes manager. An assessment was made for the purpose of repairing the line.

At the annual meeting of the stockholders of the Black River Telephone Company, held in Lowville, N. J., directors for the ensuing year were elected as follows: F. P. Lansing, Copenhagen; William S. Hayes, Constableville; H. S. Belknap, Boonville; George Sherwood, Lowville; D. C. Cox, Syracuse; H. S. Stevens, New York; Charles W. Pratt, Boonville; J. J. Domser, Lowville; Dr. W. A. Kelly, Lowville; George S. Reed, Lowville; Howard A. Pease, Constableville. Officers were elected by the directors as follows: President, C. W. Pratt, Boonville; vice-presidents, Dr. W. A. Kelly, J. J. Dormser, Lowville; treasurer, George Sherwood, Lowville; secretary, S. C. Ormsbee, New York. The executive committee was named as follows: C. W. Pratt, Dr. W. A. Kelly, J. J. Dormser, H. S. Stevens, George Sherwood.

RATES.

GAFFNEY, S. C.—Since February 1 telephone subscribers in Gaffney have paid the rate for a long distance telephone or talk from a pay station when a long distance connection has been desired. It will now be impossible for any patron of the telephone system to secure long distance connection without first paying 50 cents per month additional for long distance service, which was all that was asked for the installation of the new system.

JEFFERSON CITY, MO.—Senator Gardner introduced a bill fixing telephone rates at three cents for ten miles; half a cent for the next ninety miles and one-third of a cent for all distances over 100 miles. A fine of $300 is proposed for violation of the law.

MITCHELL, S. D.—The city council and Dakota Telephone Company, after a joint discussion, have been unable to reach an agreement on rates for the new automatic system which the company is now installing. The franchise of the company will expire in three months, and the city insists on a lower rate for the automatic than the company will stand for, and a strong fight is bound to result. Both sides have endeavored to meet the situation, but they are so far apart on rates that there is little chance for an agreement. In all probability the company will endeavor to get the case into court for an adjudication.

OMAHA, NEB.—The Cuming County Telephone Company was granted permission to raise rates of 50 cents per month for extension sets and 25 cents for interconnecting systems on its Wisner exchange.

PHILADELPHIA, PA.—The Keystone Telephone Company has announced that it will charge $10 more for private lines to the new Stock Exchange building than is charged for such service to the old building. This will bring the rate up to $60 a year.

At its annual meeting the Farmers' Mutual Telephone Company, of Sterling, Ill., made a ruling and adopted a resolution that the switch dues be raised from $2.50 to $4.00 per year and that they be paid in advance for at least six months.

The charges for telephones were raised about 25 per cent in Lexington, Ky., and a higher per cent in the county by the Home Telephone Company, which recently absorbed the Cumberland Telephone Company in Lexington and county and Woodford county. The new rates are to go into effect April 1. With the amount of the monthly discount of 25 cents, subtracted in every instance for prompt payment, the net increases made in rates are as follows: Within the city limits of Lexington—On single-line business telephones, 75 cents a month; two-party line business telephones, $1 a month; both single and two-party residence telephones, 50 cents a month. The old charge was $2 for a single-line residence telephone and for a business telephone $4. Outside the city limits of Lexington and within Fayette county—Eight-party lines will be abolished in favor of four-party lines. The net increase for four-party lines above the eight-party lines will be 50 cents a month plus 21 cents a mile for every mile from the city limits of Lexington.

The rates proposed to be charged by the new Range Telephone Company of Virginia, Minn., are $2.50 a month for business telephones, $1.75 for private residence telephones, $2 for party business telephones, and $1.50 and $1.25 for two and four-party line residence service. These rates range from 11 to 30 per cent less than the present company operating upon the range is charging, the heaviest reduction affecting the business telephones. The council is endeavoring to have free service furnished to Mountain Iron, Eveleth, Gilbert, Biwabik, Aurora and other nearby towns, but this has not yet been definitely adjusted to the satisfaction of both parties.

YONKERS, N. Y.—Telephone toll rates between Yonkers, Mount Vernon, Bronxville, Tuckahoe and Hastings were reduced by the New York Telephone Company on February 1 from 10 to 5 cents for subscribers and from 15 to 10 cents for others.

CONSTRUCTION.

ALBANY, N. Y.—The New York Telephone Company has men working night and day installing new switchboards in its building at Maiden lane and Chapel street preparatory to the taking over of the Home Telephone Company on May 1.

AUGUSTA, WIS.—The Augusta Light and Telephone Company properties of Augusta, Wis., belonging to the J. L. Ball estate, have been sold to Assemblyman E. J. Kneen and L. J. Roberts of Bangor. The line will be operated on the same policy as hitherto and will be an independent organization. Mr. Kneen is an experienced telephone man and it is expected that the servic will be greatly improved under his and Mr. Roberts' managment.

ANN ARBOR, MICH.—The merger of the Home and Bell telephones, with stations at Ypsilanti and Dexter, will go into effect Sunday, February 2, and will affect approximately 7,000 subscribers.

BIRMINGHAM, ALA.—Costing $54,000, the Southern Bell Telephone and Telegraph Company will erect a modern warehouse on Sixth avenue between Seventeenth and Eighteenth streets.

BOSTON, MASS.—Among the notable new buildings being planned by the New England Telephone and Telegraph Company are exchanges for the Back Bay and Roxbury. The Back Bay exchange is to be on Belvidere street, almost opposite the

Mechanic Arts High school. The estimated cost of the Roxbury exchange is $300,000 and of the Back Bay exchange $500,000. The Back Bay exchange is scheduled for operation about January 1, 1914, and the Roxbury exchange about February 1, 1914.

Carlsbad, Tex.—The San Angelo Telephone Company is to erect a new telephone exchange building in this city.

Cincinnati, O.—Formal application was made recently by the Cincinnati and Suburban Telephone Company for a permit to erect its new structure at Fourth and Hammond streets. The building will be 83x120 feet, and ten stories high. Because of the height of each story, however, the building will equal a twelve-story structure. It will be built of concrete and brick and will cost $600,000.

Clarinda, Ia.—The Mutual Telephone Company has just completed installing a new metallic circuit to Yorktown. It will soon extend the same to College Springs, thus furnishing direct connection between the Springs and Clarinda.

Creston, Ia.—Just as soon as the system can be installed here the Creston division of the Burlington railroad will use the telephone system of train dispatching. It is said the materials have been ordered and work will begin as soon as they arrive. The same force of men will operate the new system that now handles the telegraph keys.

Core, Ark.—A new telephone line is being built from Grannis, eighteen miles south, to this place, by way of Wickes, Hatton and Vandervoort, and the line will also be extended to Bethel, Okla., thirty-five miles southwest. C. L. Smith, of Grannis, is the promoter and builder of the new line, and the exchange will be located here, Mr. Smith having bought property for that purpose. The line will not only connect with the lines already established here, but will have long distance connections.

Duluth, Minn.—Improvements involving large capital expenditures are contemplated by the Zenith Telephone Company during the coming season. These will include placing further wires in underground conduits, the completion of its heavy copper circuit at Woodland, and extensions of lines in the outlying sections of the city.

Fort Dodge, Ia.—At a cost of $62,000 the Fort Dodge Telephone Company is rehabilitating its service. A fireproof building has been constructed and a new switchboard with a maximum capacity of more than 8,000 telephones is being installed at a cost of $12,000.

Hutchinson, Kan.—Construction crews of the Bell Telephone Company are busy extending long distance telephone lines in Southwestern Kansas and connecting the towns along the new Santa Fe extension with those on the Rock Island line. One toll line is being built from Sublette south to the Rock Island at Liberal.

Jacksonville, Ill.—The offices of the Inter-State Telephone Company are being remodeled. Several thousand dollars will be spent. The company plans an inspection day for the public when they are completed.

Kalamazoo, Mich.—Work has been started on cable extensions and replacements in the north end of the city by the Michigan State Telephone Company. An estimate for the work, which is to cost $20,564, was approved by the company and the area for which relief is promised amounts to 16 per cent of the total circuits in the Kalamazoo exchange, which at the present time has over 6,750 telephones.

Lyerly, Ga.—A new telephone exchange is being put into operation between this place and the Alabama line via Chattoogaville, the Farmers' Telephone Company putting up the line, it being a one-wire system. There are many telephones being installed by the farmers along the line.

Montgomery, Ala.—Expert electricians have started work on the installation of the private telephone exchange at the capitol. Forty instruments for the various offices in the building will be installed, each being connected with a private exchange which will be connected by a trunk line with the main downtown telephone exchange.

Moosic, Pa.—With the establishing of a new telephone exchange at Moosic by the Bell Telephone Company the subscribers will now receive a much better service. The new exchange is located in the Butler building, Moosic, and is under the supervision of District Manager C. F. Brisbin, of Pittston. The new exchange is modern in every respect. The territory to be served extends from Dupont to Minooka. Avoca, Moosic, Duryea and Old Forge are included, together with a wide area between these towns.

Muscatine, Ia.—The Iowa Bell Telephone Company will install a mile of cable in this city the coming spring. Two thousand feet of the new cable will be strung on Cedar street and is made necessary by the increase in the list of subscribers.

Nacogdoches, Tex.—The Southwestern Telegraph and Telephone Company has acquired the local telephone exchange from E. A. Blount. Many improvements in the system are planned.

Nashville, Tenn.—For a consideration of $60,000 the Cumberland Telephone and Telegraph Company has bought the property at the corner of Church street and Third avenue, on which one of their office buildings now stands. The new building to be erected will cost about $250,000 and will be large enough to care for the steady growth of the corporation.

Newcastle, Wyo.—The Limestone telephone line is now completed out of Newcastle, allowing communication with the Hills.

Ocala, Fla.—Ocala's new telephone exchange building is now completed and the big new modern switchboard is being installed. The telephone folks are stringing new cables and will soon substitute the new semi-automatic transmitter and receivers, giving to Ocala a strictly up-to-date service and second to none in the state.

Orange, Tex.—On account of the phenomenal growth of business in Orange in the past few months, the Southwestern Telegraph and Telephone Company has decided to make extensive improvements in their local exchange, which will include the installing of three more switchboards and the employment of three additional operators.

Oskaloosa, Ia.—Two hundred new lines are to be added to the board capacity of the Home Telephone Company's exchange, according to an announcement recently made. About $8,000 will be spent in this improvement, and in reconstructing toll lines during 1913.

Estancia, N. M.—As soon as weather conditions permit work will begin in the Manzanao National forest east of this city for completing a telephone system which will efficiently cover the forest from Placitas to Mountclair, including the Sandia and Manzanao mountain ranges from end to end. A line at present connects the end of the mountain states line at Tijera with San Antonia, to Madera and over the divide to the Ellis ranch. A short line will also be built to a lookout station at the top of Cedro peak. Last year a telephone was installed at the lofty Rea ranch lookout station on the Bosque peak, and connection extends now clear to Mountainair at the south end of the range.

Virginia, Minn.—The Mesaba Telephone Company has established a telephone station at Forbes, fifteen miles south of Virginia on the Missabe road. The country in the Forbes district is developing rapidly in an agricultural way and much dairy, garden and farm produce comes from there to Virginia. The service will be of great benefit to the farmers as well as to the merchants who desire to purchase what the farmers have for the market.

Watertown, S. D.—The headquarters of the Dakota Central Telephone Company at Aberdeen announce the contemplated immediate construction of a new building for the company's business here. The new structure will be a steel and concrete building, two stories and basement, and will cost approximately $20,000. It will be built on First avenue south, between Oak and Maple streets, the dimensions to be 30 by 60 feet. Work will be started early in March and the company expects to equip the new building with the automatic telephone system in vogue in several South Dakota towns.

NEW COMPANIES.

Atoka, Okla.—The Harmony Telephone Company of Atoka, capital, $1,000. Incorporators, C. C. Bonham, J. N. Green, G. A. New, M. H. Vanderburg and L. L. Immell, all of Bruno.

Boonville, N. Y.—West Boonville Telephone Company, Inc., Boonville, N. Y., to operate telephone line in villages of Boonville and North Western in Oneida county, New York; capital, $2,000. Incorporators: Samuel Dorn, Perry Tabald, Newton Gleasman, George H. Sasenbery, Clarence Safford and Leslie Grimshaw, all of Boonville, N. Y.

Blackwell, Tex.—Bethel Telephone Company of Blackwell; capital stock, $780. Incorporators: L. J. Burkhalter, M. Bacon and C. J. Wimer of Blackwell.

Clyde, Tex.—The Independent Telephone Company of Clyde was organized with $5,000 capital. The incorporators are R. J. Estes, B. C. Clemer, J. L. Tabor and others. R. J. Estes was elected president, C. L. Tyson vice-president, J. A. Kelsey secretary and treasurer; directors, R. J. Estes, Dr. J. H. Bailey, J. R. Tabor, W. E. Kirk, L. D. Boyd, B. L. Buydston, B. C. Clemer. The purpose is to install a telephone system for Clyde and community.

Columbus, O.—The Brickner Telephone Company, Washington township, Van Wert county; David A. Nickolt and others; $300.

EVANSVILLE, IND.—The Slaughter Avenue Telephone Company filed articles of association, incorporating with a capital stock of $500. The object of the new company is to establish, maintain and operate a telephone line in Knight township. The directors of the company are Walter Sirkle, Fred Sirkle, Richard W. Martin and George T. Nuerrenbern.

EXCHANGE, W. VA.—The Exchange Telephone Company of Braxton county, West Virginia, with principal offices at Exchange, W. Va., to operate telephone lines. Authorized capital, $5,000. Incorporators: H. T. Lloyd, Lester Gerwig, W. N. Cutlip, A. W. Engle, W. H. Stump and others, of Exchange, W. Va.

FREMONT, O.—The Fremont Home Telephone Company, Fremont; $125,000 to $200,000.

GRIFFITHSVILLE, W. VA.—Griffithsville Telephone Company of Griffithsville, W. Va., to operate telephone line. Authorized capital, $5,000. Incorporators: F. J. Sheppard, T. B. McMellen and T. B. Barrett, or Griffithsville, W. Va., and W. T. Bell, of Amy, W. Va., and M. A. Tudor, of Tango, W. Va.

GLADESVILLE, W. VA.—The Glade Valley Telephone Company of Gladesville, W. Va., to operate telephone lines. Authorized capital, $5,000. Incorporators: Guy E. Shaffer, Charles L. Rodgers, William G. Walls, Harvey T. Limton, of Independence, W. Va.

GUTHRIE, OKLA.—Cotton Wood Telephone Company, Guthrie, Okla. Capital stock, $240. Incorporators: J. A. Purviance, P. H. Cooper, N. G. Rich, P. B. Withrow and Gus Freundt, all of Guthrie.

GREENVILLE, N. Y.—Newry Rural Telephone Company, Greenville, N. Y. To operate telephone line in and about the village of Greenville, Greene county, New York. Capital, $130. Incorporators: M. J. Dennison, W. S. Linsley, W. W. Applebee, M. P. Stevens, E. R. Palmer, L. E. Terbush and Eugene Spaulding, all of Greenville, N. Y.

RENO, NEV.—Incorporation papers for the Bell Telephone Company of Nevada were filed with the secretary of state. The new company, it is stated here, has purchased the interests of the Pacific Telephone and Telegraph Company of Nevada, and will take steps to extend its lines in Nevada. The incorporators are: H. T. Scott, E. C. Bradley and S. W. Eaton. The company is capitalized at $500,000, divided into 5,000 shares. A new building will be erected here.

NORFOLK, VA.—The Seagrove Telephone Company of Why Not, Randolph county; capital, $20,000; by E. R. Yow and others.

RIO GRANDE, TEX.—Rio Grande Telegraph and Telephone Company, Rio Grande, Starr county; purpose, to construct and operate a telephone line in the counties of Cameron, Hidalgo, Starr, Zapata, Webb, Duval, Nueces and San Patricio; capital stock, $5,000. Incorporators are Francisco B. Guerra of Duval county, Manuel Guerra, H. P. Guerra of Starr county.

REELSVILLE, IND.—The Reelsville Telephone Company, Reelsville; $3,000; to operate a telephone system; G. R. Huffman, J. A. Rightsell, C. A. Knight.

SALYERSVILLE, KY.—Salyersville Telephone Company, Salyersville; capital, $500. Incorporators: Chick Patrick, B. K. Given and D. J. Wheeler.

TURNER, MICH.—The Iosco and Arenac County Telephone Company is the name of the new telephone service which embraces the southwestern portion of Iosco county and the northern portion of Arenac county. The headquarters of the company are at Turner.

VERNON, N. Y.—Vernon Telephone Company, Inc., Oneida county, New York; to operate telephones in parts of Madison and Oneida counties, New York; capital, $10,000. Incorporators: Julia E. Brewster, D. B. Case, J. D. Shipman, George Capes, F. H. Tygert, Anna W. Tygert, all of Vernon, N. Y.

FRANCHISES ASKED AND GRANTED.

AUSTIN, TEX.—The Southwestern Telegraph and Telephone Company took out a new permit to do business in Texas, saving $800 thereby, although the permit cost $10,000. The company had intended amending its charter by increasing its stock from $20,000,000 to $40,000,000, but this step would have cost the additional $800.

BIWABIK, MINN.—The franchise of the Range Telephone Company was given its second reading and after some discussion by the council. Biwabik is the first of the range towns to pass the franchise. The company expects to get franchises at Eveleth, Gilbert and Virginia. The service will be automatic and the company says it will compete with the Bell Telephone Company on its merits.

CLINTON, IA.—Representing the Fulton County Telephone and Telegraph Company, which presented a franchise at the last meeting of the city council, Lewis Thompson, Steven Drake and Manager Anderson of Canton were in this city recently interviewing some of the members of the city council and other interested citizens. The matter was explained to Mayor Johnson, that the company was not desirous of a franchise if they are permitted to enter the central office of the Farmington Telephone Company, taking their chances as to the successfulness of the move. Their desire has been to enter the city of Farmington on an equal footing with the Bell Telephone Company, and if they are granted this privilege they will not require a franchise.

DAVENPORT, IA.—The franchise of the Automatic Telephone Company is being considered by the town councils of Bettendorf, East Moline and Silvis. At a meeting of the Bettendorf council the granting of a franchise was taken up and postponed for further consideration. The Silvis town board prepared a draft of a franchise which, if the Automatic accepts, will be the working agreement there. This franchise runs for twenty-five years.

EVANSVILLE, IND.—Following the decision of Judge F. M. Hostetter in Superior court a few weeks ago, upholding the Board of Public Works in its refusal to grant a franchise to the Independent Telephone Company, directors of the Independent company met in the office of Attorney E. Q. Lockyear and decided to take the case to the Supreme Court of Indiana.

GILBERT, MINN.—The city council granted the new Mesaba Telephone Company a conditional franchise. The condition is that the franchise is void if the city of Virginia does not also grant the company a franchise within four months or 120 days.

GRUNDY CENTER, IA.—The Grundy County Mutual Telephone Company, a local organization, has filed its acceptance of the franchise recently granted by the town council and has ordered over $12,000 worth of equipment for the new system which it proposes to install as soon as the weather will permit.

HOPKINSVILLE, KY.—Christian County will offer for sale March 3 a telephone franchise, this being the unanimous decision of the Fiscal court Wednesday afternoon. The rates specified are: Business or professional telephones, direct line, $4; business or professional telephones, party line, $2.50; residence party line, $1.50. No party line is to have over five telephones on account of the small number of direct residence lines in the county. No rate for these was promulgated.

MUSKEGON, MICH.—Muskegon can have a new telephone exchange building, new exchange and new equipment just as soon as the council and the people of the city signify their willingness to give the United Home Telephone Company a franchise that will enable the company to earn 6 per cent net on its investment, plus an allowance for depreciation on the property, to be fixed by the state railway commission.

STREATOR, ILL.—The members of the city council decided to allow the Central Union Telephone Company a franchise for twenty-one years provided the company agrees to reimburse the city by paying 2 per cent of their gross receipts or concede some benefit to the city equivalent thereto. In the event of the company refusing to accept the substitute no further action is to be taken on the application of the Central Union Telephone Company.

SILVIS, ILL.—At the special meeting of the village board of Silvis an ordinance granting a franchise to the Tri-City Home Automatic Telephone Company was prepared by the board and if satisfactory to the company a twenty-five-year franchise will be given.

VIRGINIA, MINN.—The city council gave the third and final reading to the Range Telephone Company franchise ordinance. This does not mean a new franchise was granted. Now the franchise is up to be bid on and the council under the provisions of the ordinance may reject any or all bids.

FINANCIAL NOTES.

AUSTIN, TEX.—The Southwestern Telegraph and Telephone Company today paid into the State Treasury $22,630.47 as a tax on its gross receipts in Texas for the quarter ending December 31, 1912. The gross receipts were $1,508,697.92.

COUNCIL BLUFFS, IA.—The capital stock of the Botna Valley Farmers' and Merchants' Mututal Telephone Company of Oakland has been increased from $15,000 to $17,000, according to an amendment to the articles of incorporation of the company which has been filed in the county recorder's office. The shares are worth $40 each at par. Provision is also made in the amendment for the purchase of stock to any amount not to exceed 25 per cent by any one stockholder. This stock may be sold at any time to any person or company not in competition with the Botna Valley Mutual. C. H. Van Druff is president of the company and M. H. Parks is secretary.

COLUMBUS, O.—In the Common Pleas court Judge E. B.

Kinkead allowed the sale of Texas Telephone stocks, held by the Columbus Savings and Trust Company, at a basis of 60. About $95,000 will accrue from the sale. The figure is about half what the bank gave for the securities.

Chippewa Falls, Wis.—The Chippewa County Telephone Company has just issued $75,000 worth of stock and the proceeds of the sale will be used to install the company's automatic telephone system.

Dallas, Tex.—The following amendment was filed: Del Rio and Western Telephone Company, increasing capital stock from $80,000 to $100,000.

Frankton, Ind.—The Farmers' and Citizens' Telephone Company, of Frankton, has increased its capital stock from $10,000 to $20,000.

Greencastle, O.—The Greencastle Local Phœnix Telephone Company, of Greencastle, has announced an increase in capital stock from $8,000 to $100,000.

Maquoketa, Ia.—The Bell Telephone Company has closed a deal in which they secure control of the telephone exchange at Maquoketa. The purchase price was $75,000.

Mexico, Mo.—The Mexico Mutual Telephone exchange was sold by the Laddonia, Rush Hill and Mexico Telephone Company in a combination of mutual lines over this and adjoining counties. The price the exchange brought is $2,000.

New York, N. Y.—American Telephone and Telegraph stockholders have authorized an issue of $67,000,000 4½ per cent twenty-year convertible bonds, which will be convertible into stock after March 1, 1915, at $120. Stockholders may subscribe at par to the new issue to the extent of 20 per cent of their present holdings.

Tipton, Ind.—The Tipton Telephone Company of Tipton has increased its capital stock $65,000.

Washington, D. C.—The Chesapeake and Potomac Telephone Company sent to the senate its report for the year. It shows total receipts of $1,625,220.31, with administration expenses of $123,012.57, and operating expenses of $322,365.52. The maintenance cost amounted to $572,607.20, and rentals, insurance, etc., to $78,810.43, and dividends and interest to $458,422.81, leaving a balance of $70,000.72.

MISCELLANEOUS.

Atchison, Kan.—At a meeting of officials in the Missouri and Kansas Telephone Company's offices in Atchison, February 1 was fixed as the date for the consolidation of the two local plants, the Atchison Telephone Company having been bought out several months ago by the Bell company. It was also decided to build an addition to the Missouri and Kansas Telephone Company's building. The addition will be an engine and boiler room.

Boise, Idaho.—The Independent Long Distance Telephone Company has won in the federal district court as defendant in a suit filed against it by Oren E. Taft and L. K. Boysen. Judgment for $6,000 commission, with interest and costs, was asked by the plaintiffs, claiming that sum due them for having negotiated a sale of the company's bonds.

Burnet, Tex.—A deal was closed here by which the Smart Telephone Company of this place was sold to A. L. Collins of San Antelo by W. E. Howard for a consideration of about $11,000. There are about 250 or 300 telephones belonging to this system. Mr. Howard took up as a part of the consideration a ranch of 700 acres in Irion county and will shortly move there.

Clayton, O.—It is rumored that the greater part of the stock of the Thousand Island Telephone Company has changed hands, and that the company will now endeavor to improve the local service. The possibility of all night telephone service interests the town's people, and is a hoped-for result of the transaction.

Columbus, Ohio.—Consolidation of the telephone business in Union county under one company is sought in a joint petition filed by the Union County Farmers' Telephone Company and the Union County Telephone Company. The former seeks to purchase the latter at an agreed price of $3,398.

Columbus, Ohio.—Suit has been filed in the state of Mississippi against the Western Union Telegraph Company, Cumberlannd Telephone and Telegraph Company and the American Telephone and Telegraph Company, charging violation of the anti-trust laws and asking that the companies be compelled to dissolve.

Courtland, Kan.—Lovewell, an adjoining town in Jewell county, is to have a telephone system. The Commercial Club has so planned at a late meeting. It has just been decided to consolidate with three other nearby companies, including Courtland, Mormoso and Webber lines.

Des Moines, Ia.—The ordinance placing a tax of $1 on telephone and telegraph poles and on each mile of underground wire was passed by the city council without change, the measure effective Jan. 1.

Dallas, Tex.—Certificate of dissolution was filed by Dripping Springs Rural Telephone Company of Dripping Springs, Travis county.

Dowagiac, Mich.—The Home Telephone Company, with head offices in this city, is negotiating for a large amount of telephone property in Berrien county, including exchanges at Berrien Springs, Baroda and Calien and a considerable mileage of toll line. The deal may also include lines and franchises into Buchanan and Niles, which are now held by South Bend parties.

Fountain City, Wis.—The Fountain City Telephone Company, formerly owned by Fred Fielder and William Mueller, has changed hands, Barney Botzet having purchased it and taken charge. The system covers a large territory extending to Alma, Waumandee, Arcadia and Winona and all nearby towns, including nearly every farmer in the neighborhood.

Great Falls, Mont.—After having been afflicted for several years with two separate telephone systems, Great Falls is now enjoying a single exchange system, the work of consolidating the two systems having just been completed after several weeks of work upon the part of a large force of electricians.

Philadelphia, Pa.—Lansford Town Council is adopting an ordinance compelling trolley, electric light and telephone companies to pay a pole tax of 10 cents on each pole.

Monticello, Ia.—The Jones County Telephone Company, which has never been a paying investment, will be sold shortly under a foreclosure sale. A short time ago a receiver was appointed and in order to pay the indebtedness, or a part of it, it has been decided to sell it. The Iowa Telephone Company is a bidder. It is not known whether there are others or not.

Napoleon, O.—The extent of damage done to the telephone system in this section by sleet and ice recently was very great.

Perry, N. Y.—The Perry Telephone Company suffered a loss of nearly $2,000 as the result of the burning out of the local switchboard.

Harrisburg, Pa.—Two receivers will be appointed by Federal Judge Witmer in the near future to conduct the affairs of the various underlying and subsidiary companies of the American Union Telephone & Telegraph Company. One will be selected by the court and the other from among those which may be nominated by counsel.

Scranton, Pa.—Judge C. B. Wittmer named A. W. Lee, of Clearfield, to be receiver of the Huntington-Clearfield Telephone Company, and William B. McCaleb, of Harrisburg, receiver of the United Telephone and Telegraph ompany, operating in Harrisburg, Sunbury and Williamsport. The companies for which separate receivers were named are part of the property of the American Union as a holding company.

Seattle, Wash.—A bill submitting to the voters at the March election a $2,000,000 bond issue to provide funds to establish a municipal telephone system with accommodations for 16,250 telephones, was introduced in the City Council. The bill provides for $500,000 general bonds and $1,500,000 utility bonds secured by earnings of the plant. The bill was referred to committee.

Berclair, Tex.—The local telephone exchange has been purchased by K. T. Cook.

Boling, Kan.—Fire of unknown origin destroyed the telephone exchange at Boling.

Buffalo, N. Y.—The certificate of merger was filed of the Trumbulls Corners Telephone Company, of Tomkins and Schuyler counties, New York, by the Federal Telephone Company of Buffalo, N. Y.

Deer River, Minn.—A deal was closed recently whereby Milo L. Smith, manager and founder of the Deer River Telephone exchange, sold out the system to S. Kane and John G. Bartholomew, who also bought the Bagley exchange. The local exchange, established three years ago on a small capital by Mr. Smith, is a thriving institution, having 110 telephones in the village, twenty-seven in the township farmers' line, and eight in the Jessie Lake farmers' line, with all increasing rapidly and extensions in immediate prospect.

Fort Stockton, Tex.—The Alpine Telephone Company, Fort Stockton, filed a certificate of dissolution.

Fargo, N. D.—An effort is being made to get better telephone service between Litchville, Hastings and Kathryn. Although the two former towns are only seven miles apart, it is necessary to talk over sixty miles of wire, via Valley City at present.

Florence, Ala.—The entire block on Tennessee street, where the Cumberland Telephone Company has its office, was destroyed by fire, the fire being discovered in the telephone company's workroom. The flames spread rapidly, consuming the three-story building occupied by the telephone company and a furniture store.